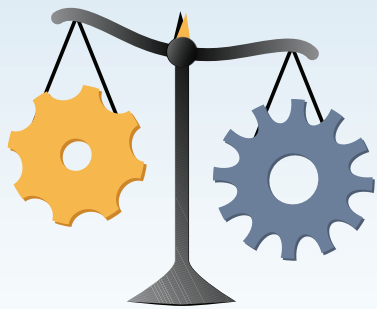




xCOMPARE

xCompare V5/V5 1.9.1 User Manual

Contents

1	Introduction	8
1.1	About xCompare	8
1.2	Notation conventions in this document	9
1.3	Contacting Transcat PLM	9
2	Installation	10
2.1	System requirements	10
2.2	Install xCompare using the installation package	11
2.3	Install xCompare manually	15
2.4	Request and install licenses	15
2.4.1	Introduction	15
2.4.2	Obtain license keys	16
2.4.3	Install a LUM nodelock license	16
2.4.4	Install a LUM concurrent license	16
2.4.5	Install a FlexNet nodelock license	17
2.4.6	Install a FlexNet concurrent license	17
2.4.7	Configure a computer to use a FlexNet concurrent license	17
2.5	Environment variables	17
3	Starting xCompare in a CATIA session	21
4	Reference to the main window	22
5	Comparing models in interactive mode	27
6	Comparing models in batch mode	28
6.1	Prerequisites	28
6.2	Creating a batch input file	28
6.3	Checking in batch mode	31
7	Analyzing the results	33
7.1	About reports	33
7.2	Viewing results in the analysis window	33
	Filter by result	35

	Filter by element name	35
	Filter by path	35
7.3	Fine Analysis for visualizing geometrical differences	37
7.3.1	Fine Analysis in 3D	37
7.3.2	Fine analysis for the Compare Model by Image check	37
7.4	Enhanced visualization	40
7.5	Reference to the analysis window	43
7.6	Reference to the Enhanced Visualization dialog	47
7.7	Reports viewed in an HTML browser	52
8	Organization of checks	56
8.1	Introduction	56
8.2	Edit configurations	56
8.2.1	Create a configuration	56
8.2.2	Rename a configuration	56
8.2.3	Delete a configuration	56
8.3	Editing checks	57
8.3.1	Deactivating and activating a check	57
8.3.2	Defining check parameters	57
8.3.3	Defining mapping rules	57
8.3.4	Rename a check	57
8.3.5	Duplicate a check	57
8.3.6	Delete a check	57
8.4	Configuration editor reference	58
8.5	Mapping editor reference	59
8.6	Generating a configuration file in batch mode	61
8.7	Manually editing the configuration file	62
9	Checks and Parameters	63
9.1	Precheck	63
9.1.1	Compare CRC	63
9.2	Structure	64
9.2.1	Compare Find Types Match	64
9.2.2	Compare Find New or Deleted	65
9.2.3	Compare Find Renamed	66

9.2.4	Compare Product Components	67
9.3	Geometric	68
9.3.1	Compare Areas	68
9.3.2	Compare Axis Systems	69
9.3.3	Compare Bounding Boxes	70
9.3.4	Compare CGRs	71
9.3.5	Compare Centers of Gravity	72
9.3.6	Compare Volumes	73
9.3.7	Compare CGR to V5BRep	74
9.3.8	Compare Tessellations to CGR	75
9.3.9	Compare Transformation Matrices	76
9.3.10	Compare Drawing Views' Generated Geometry	77
9.3.11	Compare Points	79
9.3.12	Compare Sketches	80
9.3.13	Compare V5BReps to CGR	81
9.4	Metadata	83
9.4.1	Compare Activation Status	83
9.4.2	Compare Annotation Captures	84
9.4.3	Compare Annotation Datums	86
9.4.4	Compare Annotation Datums	87
9.4.5	Compare Annotation Dimensions	88
9.4.6	Compare Annotation Geometrical Tolerances	89
9.4.7	Compare Annotation Graphic Primitive	90
9.4.8	Compare Annotation Notes	91
9.4.9	Compare Annotation Roughness	93
9.4.10	Compare Color Properties	94
9.4.11	Compare Current Work Objects	96
9.4.12	Compare Dimension Properties	97
9.4.13	Compare Drawing Dittos	98
9.4.14	Compare Drawing Sheets	99
9.4.15	Compare Drawing Views' Properties	100
9.4.16	Compare Feature Input	101
9.4.17	Compare Font Properties	102
9.4.18	Compare Layer Properties	103
9.4.19	Compare Model by Image	104

9.4.20	Compare Parameters	105
9.4.21	Compare Pick Properties	106
9.4.22	Compare Point/Line Types	107
9.4.23	Compare Product Properties of Root	108
9.4.24	Compare Publications	109
9.4.25	Compare Show Properties	110
9.4.26	Compare Text Properties	111
9.4.27	Compare Time Stamps	112
9.5	Electrical	113
9.5.1	Compare Electric Bundle Segments	113
10	Mapping	114
10.1	Introduction	114
10.2	Reference to Mapping Rules	116
10.2.1	Entity Selection Rules	116
10.2.1.1	Filtering by Part Number/Name	116
10.2.1.2	Filtering by Parent Name	116
10.2.1.3	Filtering by Type	116
10.2.1.4	Select by Part Number/Name	117
10.2.1.5	Select by Parent Name	117
10.2.1.6	Select by Type	118
10.2.1.7	Select by Layer	118
10.2.1.8	Select Leaf Feature	118
10.2.1.9	Select Parent Feature	118
10.2.1.10	Selection of Visible	119
10.2.1.11	Select of NonVisible	119
10.2.1.12	Select by Parent Type	119
10.2.1.13	Select by Custom View	120
10.2.1.14	Select by Drawing Sheet	120
10.2.1.15	Select by Drawing View	121
10.2.2	Pairing Rules	122
10.2.2.1	Pair by Name	122
10.2.2.2	Pair by Type	123
10.2.2.3	Pair by Path	123
10.2.2.4	Pair by Internal Name	123

10.2.2.5	Pair by Parent Name	124
10.2.2.6	Pair by Layer	124
10.2.2.7	Pair by Custom View	124
10.2.2.8	Pair by Position	124
10.2.2.9	Pair by Bounding Elements	124
10.2.3	Aggregation Rules	125
10.2.4	Override Rules	126
10.2.4.1	Override Entity Selection Rules	126
10.2.4.2	Override Entity Matching Rules	126
10.2.4.3	Override Aggregation Rules	126
11	Keyboard shortcuts	127
12	Manually editing the configuration file	129
12.1	General notes	129
12.2	Linking concept	129
12.3	Structure of configuration files	130
12.3.1	<Environment> node	130
12.3.2	<DocumentType> nodes	130
12.3.3	<Application> node	131
12.3.4	<MappingRules> node	131
12.3.5	<MappingRule> nodes	131
12.3.6	<Checks> node	131
12.3.7	<CheckReference> nodes	131
12.3.8	<CheckInstance> nodes	132
12.3.9	<Profiles> node	132
12.3.10	<Profile> nodes	132
12.3.11	<Section> nodes	132
12.3.12	<Setting> nodes	133

12.3.13	<CheckLink> nodes	133
12.4	Create a profile	134
12.5	Rename a mapping rule	134
12.6	Duplicate a mapping rule	135
12.7	Add a check instance	136
12.8	Remove a check instance	136
12.9	Rename a check instance	136
12.10	Choose the mapping rules of a check	136
12.11	Duplicate a check instance	137
12.12	Configure mapping rule parameters	138
12.12.1	General	138
12.12.2	Aggregate by name (MR_AB_SAME_NAME)	138
12.12.3	Pair by name (MR_EM_EQUAL_NAMES)	139
12.12.4	Selection of Drawing Sheets (MR_ES_DRAWING_SHEETS)	139
12.12.5	Select by name (MR_ES_HAS_NAME)	140
12.12.6	Select by parent name (MR_ES_HAS_PARENT_NAME)	140
12.12.7	Select by parent type (MR_ES_HAS_PARENT_TYPE)	140
12.12.8	Select by type (MR_ES_HAS_TYPE)	140
12.12.9	Select by custom view (MR_ES_ISIN_CUSTOM_VIEW)	140
12.12.10	Selection by layer (MR_ES_ISON_LAYER)	141
12.13	Edit check parameters	141
13	Known Issues	142

1 Introduction

1.1 About xCompare

xCompare is an application for comparing CAD data regarding structure, geometry, and metadata. It is particularly suited for comparing different formats or versions derived from the same model.

xCompare V5/V5 can compare the following pairs of models:

- V5 Products
- V5 Parts
- V5 Drawings
- V5 Part with V5 CGR
- V5 CGR with V5 CGR

Other xCompare software is available for a range of formats, including V5/SMG, V5/JT, and JT/JT.

Modes of operation

xCompare is integrated into CATIA V5 and can operate in two ways:

- Interactive mode: Compare models from within the current CATIA session.
- Batch mode: Command line-based operation. Compare one or more pairs of models sequentially.

➤ Interactive mode: Chapter 5 *Comparing models in interactive mode*, page 27

➤ Batch mode: Chapter 6 *Comparing models in batch mode*, page 28

Definitions

Reference Document The reference document is the basis to which another model is compared.

Compare Document The compare document is the model file that is compared to the reference document.

Configuration A configuration contains application settings, mapping rules, and check instances. The same configuration can contain mapping rules and check instances for various pairs of document types. Check instances for different document types are independent from one another.

Mapping Mapping controls the correlation of elements in the reference and compare models.

Mapping Rule Mapping rules control which elements are paired with which other elements in order to be compared with each other.

1.2 Notation conventions in this document

Markings



CAUTION: A notice marked with CAUTION notifies you that performing an action may have unwanted consequences, such as loss of data.

Syntax notation for command line input and configuration files

These conventions apply to sections marked “Syntax” or “Command-line syntax”.

Notation	Description
text	Normal text to be typed as shown
[text]	Square brackets mark an optional parameter. Include this parameter, if required.
...	An ellipsis indicates that the preceding sub-expression can optionally be repeated.
<text>	Angle brackets mark text to be replaced by the required value.
{a b}	Braces mark a list of parameters, which are separated by vertical bars . Include one of the given parameters.
	If any of the special characters used for syntax notation is to be taken literally, it is preceded by a backslash. For example, \[text\] is “[text]”.

1.3 Contacting Transcat PLM

Internet

<http://www.transcat-plm.com>

Support hotline

Phone: +49 721 9704335

E-Mail: support@transcat-plm.com

Postal address

Transcat PLM GmbH

Am Sandfeld 11c

76149 Karlsruhe

Germany

2 Installation

2.1 System requirements



NOTE: xCompare is supported only on systems certified for the corresponding CATIA release. For detailed software requirements, refer to the CATIA Program Directory that is included with CATIA software.

Supported operating systems

- Microsoft Windows XP Professional 32-bit and 64-bit SP3 (until CATIA V5-6R2012)
- Microsoft Windows Vista Enterprise / Business Edition 32-bit SP1 (until CATIA V5-6R2012)
- Microsoft Windows Vista Enterprise / Business Edition 32-bit and 64-bit SP1 or SP2 (until CATIA V5-6R2012)
- Microsoft Windows 7 Enterprise / Pro Edition 64-bit RTM or SP1
- Microsoft Windows 8 Desktop Enterprise / Pro Edition 64-bit

Supported CATIA platforms and required packages

All CATIA platforms are supported: P1, P2, P3, PLM Express.

Depending on the CATIA platform, the following CATIA configuration packages must be installed and the following licenses must be available:

Platforms	Required configurations	Required licenses
CATIA P1	All configuration packages	At least MD1
CATIA P2	At least EI2+MD2+PM2+SA2 configuration and PX1 product	At least MD2
CATIA P3	On request	On request

License management

xCompare can use either FlexNet or IBM LUM licenses.

- FlexNet concurrent licenses require FlexNet Publisher license server manager, version 11.9 or later.
- No license server is required when using a FlexNet or LUM nodelock license on a single workstation.
- LUM concurrent licenses require IBM LUM license server 4.6.8 Fix Pack 13.

2.2 Install xCompare using the installation package

Follow these instructions to install xCompare using an installation package:

- 1 Make sure to use the correct installation package.

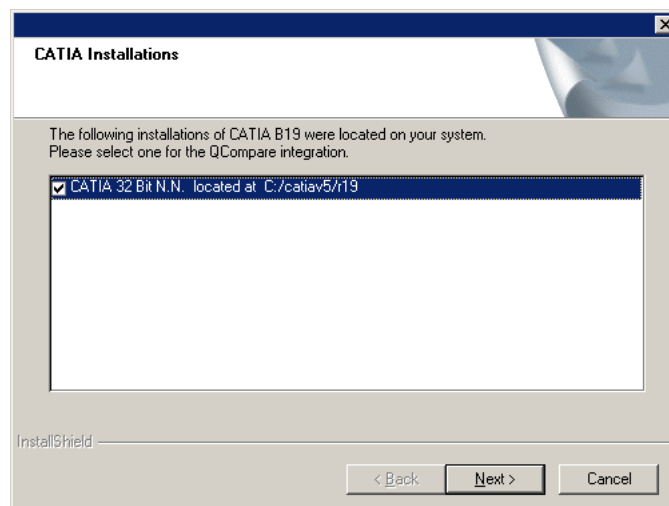
There are different installation packages for the particular CATIA releases, and for 32-bit and 64-bit systems. "B64" in the file name indicates an installation package for 64-bit systems.

- 2 Start the installation routine by double-clicking the installation package. When the "Start Installation" dialog is displayed, click "Next".

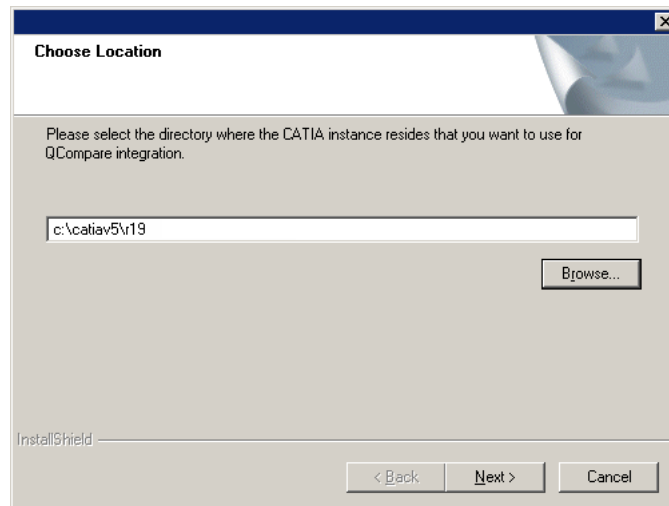
To abort at any time during installation, click "Cancel". All settings will be canceled.

To modify the settings you made in a previous step at any time during installation, click "Back" repeatedly until the desired dialog is displayed.

- 3 The installation routine looks for CATIA installations on the computer.
 - ♦ If one or more installations are found, select the desired CATIA installation, then click "Next".

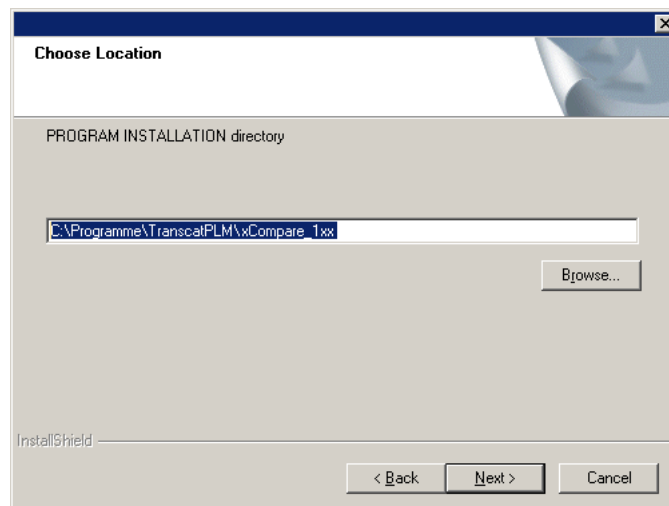


- ♦ If no CATIA installation has been found, the following dialog is displayed instead. Choose the directory where CATIA is installed, then click "Next".

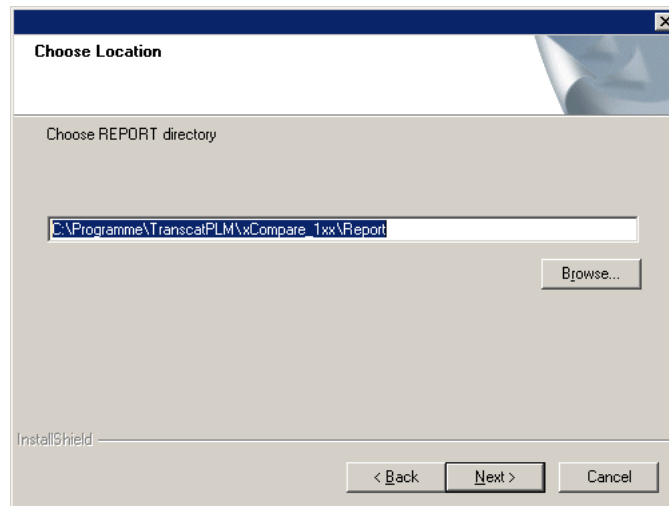


TIP: You can recognize the CATIA installation directory by its subdirectory named intel_a (for 32-bit versions) or win_b64 (for 64-bit versions).

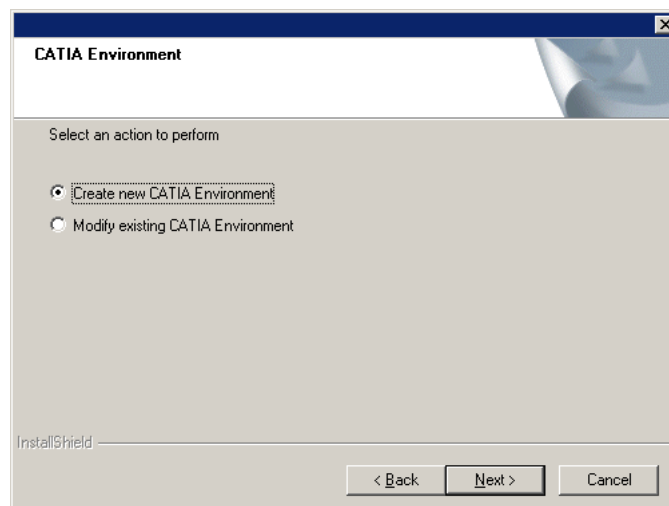
- 4 Specify the directory where to install the xCompare application, then click “Next”.



- 5 Specify the directory where xCompare report files will be stored, then click “Next”.



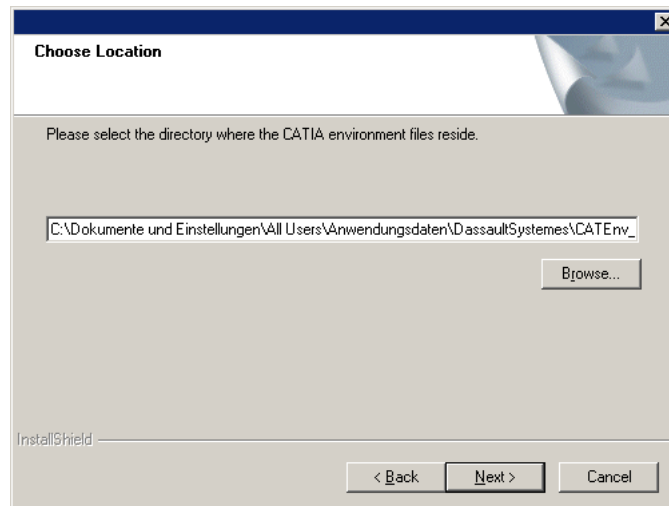
- 6 To make xCompare available in CATIA, a CATIA environment must be prepared. Choose one of the following options:



- ♦ “Create new CATIA environment”: A new environment file will be created. Click “Next” to continue.
- ♦ “Modify existing CATIA environment”: With this option, click “Next” to display a file selection dialog that displays the local CATIA environment directory. Select the CATIA environment file that you want to modify.

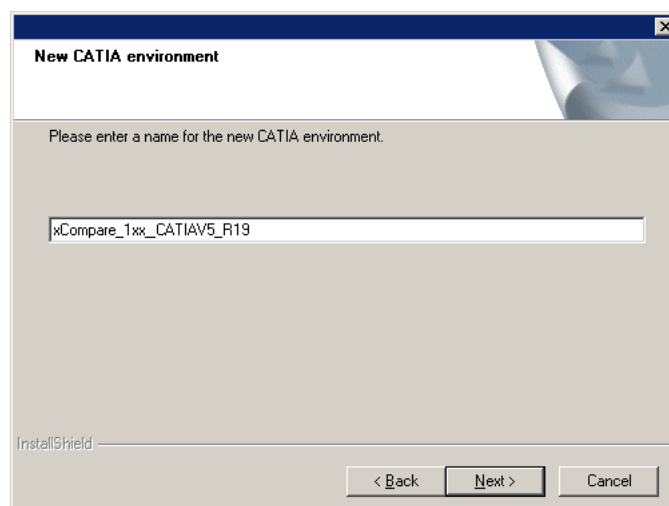
If the selected environment already contains xCompare variables, an error will be displayed. In this case, choose a different environment file, or delete the existing xCompare environment variable definitions from the environment file manually.

- 7 When creating a new CATIA environment, you can choose a directory for the new environment file:



- 8 When creating a new CATIA environment, you can specify the name of the new CATIA environment file.

To recognize the environment readily, we recommend to include the versions of both xCompare and CATIA in the name of the environment.



Click “Next” to proceed.

- 9 The installation routine displays a summary of the specified settings. If all settings are correct, click “Next” to copy the required files to the installation directory. Otherwise click “Back” repeatedly until the desired dialog is displayed.
- 10 When the installation is complete, click “Finish” to leave the installation routine.
- xCompare is now available when you start a CATIA session using the xCompare environment. A desktop icon and start menu entry (in “Programs” > “CATIA”) with the environment named have been created.



NOTE: If you have selected the “Modify existing CATIA environment” option during the installation routine, it is recommended that you check the modified CATIA environment

file. In some cases, the modification of the environment may have failed, for example if it the environment file is write-protected or if the CATIA environment is very complex.

2.3 Install xCompare manually

To install xCompare manually, follow these steps:

1 Get the correct installation zip archive.

There are different installation archives for particular CATIA releases, and for 32-bit and 64-bit systems. “B64” in the file name indicates an installation package for 64-bit systems.

2 Extract the installation zip archive to a directory on a local disk.

3 Open the CATIA environment into which you want to integrate xCompare.

- ♦ You can open the environment in the CATIA Environment Editor.
- ♦ Alternatively, locate the CATIA environment file and open it in a text editor.

4 Add the xCompare paths and environment variables to the CATIA environment.

Environment variables are described in 2.5 *Environment variables*, page 17.

- ♦ To add a variable in the CATIA Environment Editor, right-click in the lower list and choose “New Variable” from the context menu, then type name and value of the new variable.
- ♦ Alternatively, you can edit the CATIA environment file manually in a text editor.

2.4 Request and install licenses

2.4.1 Introduction

License management

Both FlexNet and LUM license management are supported.

You can choose between FlexNet and LUM license management during installation. To change license management for an existing installation, set the TCACMP_LIC environment variable to “FLEXNET” or to “LUM”.

FlexNet and LUM license keys are not compatible with each other. Please order the required type of license key from Transcat PLM.

License types

There are two types of licenses:

- *Nodelock*: License is only valid on one computer (tied to the hardware)
- *Concurrent*: License is available in a network. A license server is required.

2.4.2 Obtain license keys

To obtain a license key for xCompare V5/V5, fill in the license order form on the Transcat PLM website:

<http://www.transcat-plm.com/lizenz>

2.4.3 Install a LUM nodelock license

Before you can use a LUM concurrent license, IBM License Use Management Runtime must be installed and configured on your computer.

To install a LUM nodelock license, follow these steps:

- 1 Locate the nodelock file on your computer.

On Windows, the default location of the nodelock file is

%ALLUSERSPROFILE%\IBM\LUM\NODELOCK

- 2 Open the nodelock file in a text editor.

- 3 The license key is contained in the license e-mail you received from Transcat PLM.

In the license e-mail, copy the two lines beginning at the # character, and paste them into the nodelock file. Example:

```
# TransCAT: TC-qcompareV5-V5, version 1.x, expiration date 12/31/2037  
7db765b90080.02.81.96.00.18.00.00.00 64tkq3wfxi2gz7t8p49keaa "" "1"
```

- 4 Save and close the nodelock file.

- 5 In the CATIA environment file with xCompare integration, define the TCACMP_LIC environment variable:

```
TCACMP_LIC=LUM
```



NOTE: The nodeLock file has no filename extension. Some text editors automatically add a filename extension such as .txt. Make sure that the filename has no extension. Rename the file if necessary.

2.4.4 Install a LUM concurrent license

Before you can use a LUM concurrent license, IBM License Use Management Runtime must be installed and configured on your client computer.

In the CATIA environment file with xCompare integration, define the TCACMP_LIC environment variable:

```
TCACMP_LIC=LUM
```

2.4.5 Install a FlexNet nodelock license

- 1 The license file is attached to the e-mail you received from Transcat PLM.
Save the license file to a local directory. We recommend to create a dedicated directory for license files.
- 2 In the CATIA environment file with xCompare integration, set the TCACMP_LIC and TRANSCAT_LICENSE_FILE environment variables:

```
TCACMP_LIC=FLEXNET
TRANSCAT_LICENSE_FILE=<dirname>
```

Where <dirname> is the directory where the license file is located.

2.4.6 Install a FlexNet concurrent license

Follow the instructions in the Administration Guide for FlexNet.

You can find this document on the Transcat PLM website:

➤ <http://www.transcat-plm.com/support/downloads/flexnet-publisher.html>

2.4.7 Configure a computer to use a FlexNet concurrent license

In the CATIA environment file with xCompare integration, set the TCACMP_LIC and TRANSCAT_LICENSE_FILE environment variables:

```
TCACMP_LIC=FLEXNET
TRANSCAT_LICENSE_FILE=port@server
```

Where port is the port number and server is the host name of the license server.

Example for port 27000 at server “licserver”:

```
TRANSCAT_LICENSE_FILE=27000@licserver
```

2.5 Environment variables

The following variables define paths and settings for xCompare. You can add these environment variables to the CATIA environment file.

If xCompare has been installed using the installer, the required variables have been added to the CATIA environment during installation.

List of environment variables

Name	Values and description
TCACMPReportPath	Path to report files

List of environment variables (Continued)

Name	Values and description
TCACMPConfigPath	Path to configuration files. xCompare looks for configuration files in the given path and all its subdirectories.
TCACMPLangPath	Path for xCompare language files. This directory contains language-specific files for the interface and reports.
TCACMP_LIC	FLEXNET or variable not set: Use FlexNet license management LUM: Use LUM license management
TRANSCAT_LICENSE_FILE	Location of the FlexNet license file. This variable is required when using FlexNet license management. - FlexNet concurrent license: Specify the port number and host name of the license server, separated by the character “@” Example: TRANSCAT_LICENSE_FILE=27000@licserver - FlexNet nodelock license: Specify the path of the directory where the license file is located. Example: TRANSCAT_LICENSE_FILE=c:\licenses
TCACMPTempPath	Path to temporary model files. If the file names and unique identifiers of reference and compare document are equal, copies of the documents are stored temporarily in this directory . Make sure that you have read/write access to the specified directory and that there is enough storage space available.
TCTRACE	Path and file name of the trace file. Set this variable to record significant activities of the xCompare application in a trace file. Remove this variable to write no trace file. To improve performance, this variable should not be set during normal operation.
TCACMPTRACEMAPPING	Set this variable to record all mapping actions of xCompare in the trace file. Remove this variable to exclude mapping actions from the trace file. While this variable is set, processing time and the size of the trace file may increase considerably. This variable has no effect if TCTRACE is not set.

List of environment variables (Continued)

Name	Values and description
TCACMPIMGCAPTURE	YES: Capture images for the report directly after the check run. Processing time can increase considerably when there are many differences between the compared models. NO or variable not set: Capture images only when generating the HTML report from within the analysis window. Environment variable TCACMPNOCAPTURE is no longer used.
TCACMPSINGLECREATEHTMLREPORT	YES: Always create an additional report in HTML format. The resulting HTML report document is self-contained, which means all information, including the images, is stored in a single HTML file. NO: Do not create the additional report in HTML format.
TCACMPStyleSheetPath	Path to a customized report template. If this variable is set, xCompare copies the report template from the given path to the report directory when creating reports. If this variable is not set, xCompare uses the report template located in the intel_a\reffiles or win_b64\reffiles subdirectory of the xCompare installation.
TCACMPBrowserPath	Path and file name of the HTML browser for viewing reports. ➤ <i>Reports viewed in an HTML browser, page 52</i> If the variable is not set, the system default application for viewing HTML files will be used.
TCACMPDONOTREADANNOTATIONDATA	YES: Do not compare elements in the annotation set if the annotation set is switched off in the reference or compare document. In the result, annotation-specific checks have the “Not checked” status. Variable not set: Elements in the annotation set are checked as specified in the configuration. This variable is optional and applies to V5/V5 checks in batch mode only. In interactive mode, use the corresponding setting in the “Settings” dialog instead. ➤ <i>“Do not consider annotations if annotation set is switched off” check box, page 25</i>

List of environment variables (Continued)

Name	Values and description
TCACMPREPORTONLYDIFFERENCES	YES: Reports contain only pairs of different entities. N0 or variable not set: Reports contain all checked pairs of entities. This variable is optional and applies to V5/V5 checks in batch mode only. In interactive mode, use the corresponding setting in the “Settings” dialog instead. ↗ <i>“Include only differences in the report” check box, page 26</i>

3 Starting xCompare in a CATIA session

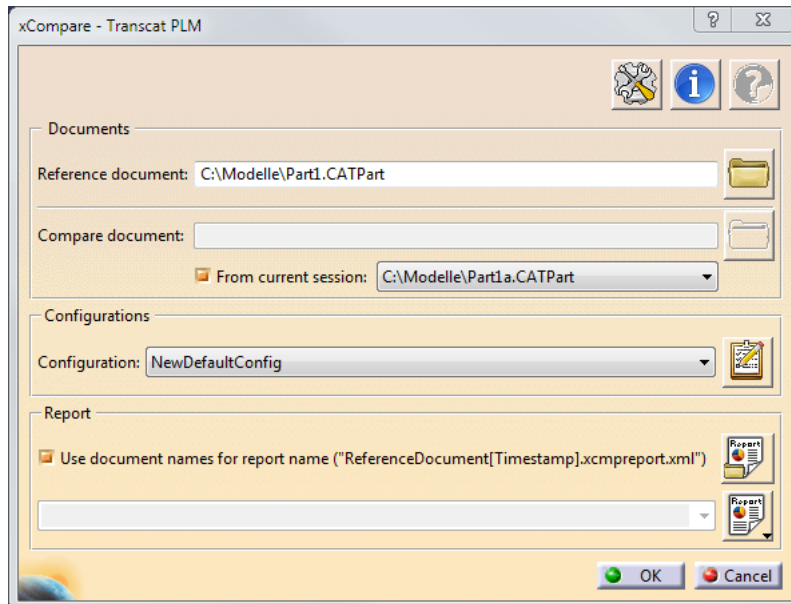
To start xCompare in the CATIA session, click the xCompare icon  on the xCompare toolbar.

► The xCompare main window is shown.

In the main window, you can do the following:

- ↗ Compare models: 5 *Comparing models in interactive mode*, page 27
- ↗ View results: 7.2 *Viewing results in the analysis window*, page 33
- ↗ Create or edit configurations: 8.2 *Edit configurations*, page 56

4 Reference to the main window



“Settings” button Show the Settings dialog.

➤ *Settings dialog, page 25*



“Show info” button Show the xCompare version.

“Show help” button Not available

“Reference document” text box Path and name of the reference document.

If you activate a model window in the CATIA session while the xCompare main window is open, the model is set as the reference document. If you activate the window of the currently selected compare document, compare document and reference document are swapped against each other.

“Compare document” text box Path and name of the compare document.

To use a model from the current CATIA session as compare document, select the “Document in session” option and choose from the list box.

“Configuration” list box Choose a configuration.



“Edit configurations” button Open the configuration editor, where you can create and edit configurations.

➤ *See Chapter 8.4 Configuration editor reference, page 58*

“Use reference document name in report name” check box with list box Use these controls to specify the report name for the next check run, or to choose an existing report to open:

- To use the default report name, select the check box.

The default report name contains the name of the reference model, followed by a timestamp in brackets (year, month, day, time) and the file name extension .qcmpreportxml.

Example This is the default report name for a reference model named Piston created on 15 March 2013 at 14:32:48.

Piston[20130315_143248].qcmpreportxml

- To specify a user-defined report name, deselect the check box and enter a name. The file name extension .qcmpreportxml is added to the report file automatically.
- The list box contains existing reports that have been created in interactive and batch check runs. To open a report, deselect the check box, then choose a report from the list and click “Open selected report”.
- To delete the report which is selected in the list box, right-click the list box, then choose “Delete” on the context menu.



“Open external report” button Click to open the “Open/Delete reports” dialog. In the dialog, you can select a report to be displayed. You can also delete existing reports.



“Open the selected report” button Click to open the report selected in the list box.

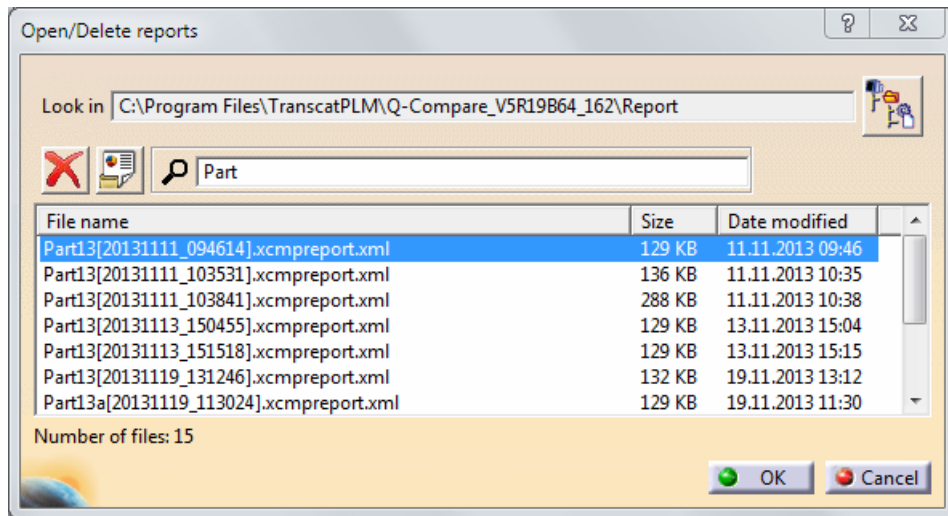
Before you can select a report, deselect the “Use Document Names For Report Name” check box. Otherwise this button is unavailable.

“OK” button Click to compare the selected models with the current settings.

“Cancel” button Click to discard all changes and close the main window.

↗ Keyboard shortcuts: *Main window shortcuts*, page 127

Open/Delete reports dialog



“Look in” text box Directory where xCompare looks for reports. The default directory is specified by the %TCACMPReportPath% environment variable.



“Select folder” button To choose a report from a different directory, click this button and select a directory.



“Delete selected reports” button Click this button to delete the check reports that are currently selected in the list.



“Open selected report” button Click this button to open the selected report.

Search field To filter the reports list, type a substring of the report names to be displayed. Clear the search field to display all reports in the current directory.

Reports list The list shows all reports in the current directory.

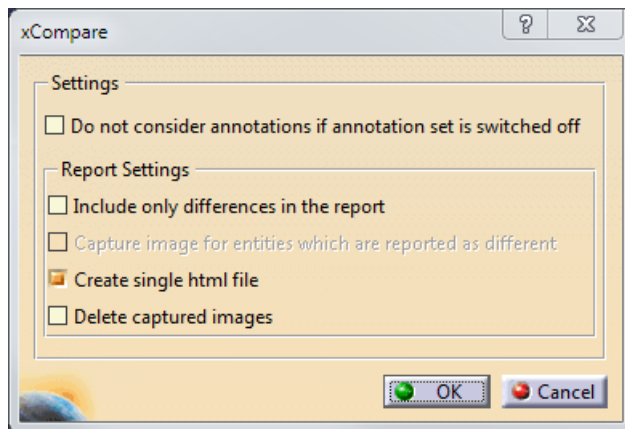
Click the column headers to sort the reports by file name, file size, or date.

“OK” button Click this button to open the report selected in the reports list.

“Cancel” button Click this button to close this dialog.

Settings dialog

Settings in this dialog are only applicable to interactive mode.



“Do not consider annotations if annotation set is switched off” check box If this option is selected, elements in a switched off annotation set are ignored.

If this option is not selected, elements in the annotation sets are considered irrespective of whether the annotation set is switched on or off.

➤ To check or ignore elements in the annotation set in batch mode, set the TCACMPDONOTREADANNOTATIONDATA environment variable.

Report Settings

“Include only differences in the report” check box If this option is selected, only different entities are included in the report.

If this option is not selected, reports include all checked pairs of entities.

The corresponding environment variable for this setting is TCACMPREPORTONLYDIFFERENCES. If the environment variable is set, this option is not available.

“Capture images for entities which are reported as different” Select this option to capture images for the report directly after the check run.

Deselect this option to capture no images at this time. Images are captured on demand when you click “Generate HTML report” in the analysis window.

The corresponding environment variable for this setting is TCACMPIMGCAPTURE. If the environment variable is set, this option is not available.

“Create single html file” Select this option to create an additional report in HTML format. The resulting HTML report document is self-contained, which means all information, including the images, is stored in a single HTML file.

Deselect this option to create only the XML report.

The corresponding environment variable for this setting is TCACMPSINGLECREATEHTMLREPORT. If the environment variable is set, this option is not available.

“Delete captured images” Select this option to delete the captured images after creating the self-contained HTML report. The images will be missing when displaying the XML report in a browser.

5 Comparing models in interactive mode

In **Interactive Mode**, you can compare the active model in the current CATIA session with another model in the same CATIA session, or with another CATIA model.

To compare two models with each other, follow these steps:

- 1 Click the “Run xCompare” button  on the xCompare toolbar.
- 2 Choose a reference document.

When comparing a V5 Part and a V5 CGR model, the V5 Part must be the reference model.

To choose a document from the file system or from a logical folder (DLName), click the “Select document” button .

To choose a document from the current CATIA session, activate the respective model window in CATIA.

- 3 Choose a compare document.

To choose a document from the file system or from a logical folder (DLName), click the “Select document” button .

To choose a document from the current CATIA session, activate the “From current session” option and choose a model from the list box.

- 4 Choose a configuration.
- 5 Optionally you can specify a user-defined report name. To do this, deselect the “Use document names for report name” option, and type a name into the report name list box. If the option remains selected, xCompare uses the default naming comprising the name of the reference document and the current timestamp.
- 6 To compare the models, click “OK”.

▶▶ A progress bar shows the progress of the compare operation. When finished, the results are displayed in the analysis window.

↗ For details see the *Reference to the main window*, page 22.



NOTE: Comparing V5 models with the same filenames or the same unique identifiers (UUIDs) may take longer than comparing models with different filenames or UUIDs. This is because xCompare has to create a temporary copy of the compare document, due to restrictions of file handling in CATIA.

6 Comparing models in batch mode

In batch mode, you can compare one or more pairs of models from the command line.

6.1 Prerequisites

To compare models in batch mode, you need these files:

- A configuration file where the checks are defined.
 - A batch input file to tell the program which models to check, which configuration to use, and where to save the reports.
- To create a configuration, see Chapter 8.2.1 *Create a configuration*, page 56.
- To generate a configuration with default settings in batch mode, see Chapter 8.6 *Generating a configuration file in batch mode*, page 61.

6.2 Creating a batch input file

Sample input file

An example of a batch input file is supplied in the input subdirectory of the xCompare installation.

Open a sample batch input file in a text or XML editor. Adapt the settings as described below, then save the file under a different name.

Multiple check runs

The required information for each pair of models to be checked is specified in an XML node named Run.

Example

```
<?xml version="1.0" encoding="utf-8"?>
<InputFile>
  <Run RunName="TestRun">
    ...
  </Run>
</InputFile>
```

To define more than one check run to be performed in one batch run, copy the entire Run node, and insert the node in a valid place, as shown in the example.

Example

```
<?xml version="1.0" encoding="utf-8"?>
<InputFile>
  <Run RunName="run1">
    ...
  </Run>
  <Run RunName="run2">
    ...
  </Run>
</InputFile>
```

You can change the RunName attribute value to distinguish the check runs in the input file, although this is not technically necessary.

Report path and name

In the ReportPath node, specify the file path for the report to be created.

In the ReportName node, specify a name for the report file without extension. If a report file with the same name already exists, the current timestamp is appended to the file name of the new report. To use the default report name consisting of the reference document name and the timestamp, leave out the ReportName node.

Example

```
<InputFile>
  <Run ... >
    ...
    <Report>
      <ReportName>MyReport</ReportName>
      <ReportPath>C:\TestData\Reports</ReportPath>
    </Report>
    ...
  </Run>
</InputFile>
```

Configuration

In the Configuration node, specify the following:

- the configuration file path in the ConfigPath node
- the configuration file name in the ConfigFileName node

```
<InputFile>
  <Run ... >
  ...
  <Configuration>
    <ConfigPath>T:\config</ConfigPath>
    <ConfigFileName>conf.qcmpconfigxml</ConfigFileName>
  </Configuration>
  ...
```

Reference and compare documents

In the DocumentPair node, specify the following:

- the file path of the reference document in the RefDocPath node
- the file name of the reference document in the RefDocFileName node
- the file path of the compare document in the CmpDocPath node
- the file name of the compare document in the CmpDocFileName node

Example

```
<InputFile>
  <Run ... >
  ...
  <DocumentPair>
    <ReferenceDocument>
      <RefDocPath>C:\TestData</RefDocPath>
      <RefDocFileName>Test3.CATPart</RefDocFileName>
    </ReferenceDocument>
    <CompareDocument>
      <CmpDocPath>C:\TestData</CmpDocPath>
      <CmpDocFileName>Test4.CATPart</CmpDocFileName>
    </CompareDocument>
  </DocumentPair>
  ...
```

Trace file

For debugging, a trace file can be created during the batch run. To create no trace file, delete or comment out the Trace node.

To create a trace file, specify the following in the Trace node:

- the file path of trace file in the TracePath node
- the file name of the trace file in the TraceFileName node.

To create no trace file, comment out or delete the Trace node.

Example Specifying the trace file

```
<InputFile>
  <Run ... >
  ...
  <Trace>
    <TracePath>C:\TestData</TracePath>
    <TraceFileName>TraceLog.txt</TraceFileName>
  </Trace>
```

Commenting out the node to create no trace file:

```
<!--
<Trace>
  <TracePath>C:\TestData</TracePath>
  <TraceFileName>TraceLog.txt</TraceFileName>
</Trace>
-->
```

6.3 Checking in batch mode

Use the following composed command to initialize a CATIA environment and to run xCompare in batch mode.

Command line syntax

```
<CATIA_Install_Path>\code\bin\CATStart.exe -env <Environment_Name>
-direnv <Environment_Path> -run "TCACmpCoreBatch.exe -i <Input_File>
-o <Output_File>"
```

<CATIA_Install_Path> CATIA V5 installation path

<Environment_Name> Name of the CATIA V5 environment with xCompare integration

<Environment_Path> Path of the CATIA V5 environment file with xCompare integration

<Input_File> Path and name of the input file. If the full path contains blanks, set the full path in a pair of three quotation marks """"..."""" (see example).

For writing an input file see Chapter 6.2 *Creating a batch input file*, page 28.

<Output_File> Path and name of the output file (a plain text file). If the full path contains blanks, set the full path in a pair of three quotation marks """"..."""" (see example).

Example

```
c:\catiaV5\B19\intel_a\code\bin\CATSTART.exe -env xCompare_V5R19_171  
-direnv "C:\Documents and Settings\All Users\Application Data\  
DassaultSystemes\CATEnv_R19" -run "TCACmpCoreBatch.exe -i ""c:\  
Test Data\MyInput.xml"" -o ""c:\Test Data\MyOutput.txt"" "
```

7 Analyzing the results

7.1 About reports

For every check run in interactive and batch mode, report files are created that contain the results of the check run.

You can view reports in the xCompare analysis window. After an interactive check run, the report is opened immediately in the analysis window.

It is also possible to view reports for V5/V5 checks in a web browser.

7.2 Viewing results in the analysis window

Opening an existing report in the analysis window

Follow these steps to open an existing report in the analysis window.

- 1 Click the “Run xCompare” button  on the xCompare toolbar.
- 2 Deselect the “Use Document Names for Report Name” option.
- 3 The list box contains the reports created in recent interactive and batch check runs. Select the report to be displayed from the list. Click “Open Report” to open the selected report.
If the report is not listed, you can open a report file from the file system. Click “Open report from file”. Select the report file and click “OK”.
- 4 If neither the reference nor the compare model associated with the report is open in CATIA, you are prompted whether to open the models.
▶▶ The report is displayed in the analysis window.

Viewing results in the analysis window

While a report is open in the analysis window, you can view its contents like this:

- ❖ Select an item in the “Checks” list of the analysis window to display the pairs of entities that have been formed for this check. You can filter the list of checks by check status.
- ❖ The “Pairs” list contains all pairs of entities that have been checked by the currently selected check. Select an item in the “Pairs” list to display detailed results with respect to the selected pair and check.
- ❖ Depending on the selected checks or pairs in the analysis window, you can use built-in analysis tools to visualize the differences of pairs:
 - Interactive selection and zoom on elements in the 3D view of the corresponding model
 - Fine analysis
 - Enhanced visualization for displaying reference and compare geometry in the same window

Check status

In the list of checks, the status of every check is indicated by colors:

Color	Check status	Description
Green	No differences	No differences between reference and compare document in any pair
Red	Different	Differences between reference and compare document in one or more pairs
Grey	Not checked	No pairs of entities were found to which the check would apply
Blue	General error	Check could not be performed, for example when one of the documents could not be read.
Cyan/Green	Precheck with equal checksum	Reference and compare document have equal check sums
Cyan/Red	Precheck with different check sum	Reference and compare document have different check sums

Pair check status

In the list of pairs, the status of every entity pair is indicated by colors:

Color	Check status	Description
Green	Equal	Matching entities, no differences
Red	Different	Differences between matching entities
Blue	General error	Check could not be performed, for example when one of the documents could not be read.

Pairs of entities

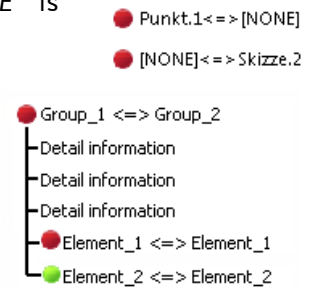
The “Pairs” list in the analysis window displays a node for each matching pair of entities that has been found. The name of the reference entity is shown left of the double arrow. The name of the compare entity is shown right of the double arrow. The pair node has a color bullet which indicates the pair’s check status.

- Multi-sections Surface.29<=>Fill.40
- Multi-sections Surface.29<=>Join.4
- Multi-sections Surface.29<=>Join.6

If no matching counterpart has been found, a label “*NONE*” is shown in place of the missing entity name.

Some entities contain sub-entities, which are displayed with their respective color bullets. The color bullet of the entity indicates the combined check result.

Additional information is displayed when selecting branches without color bullets in the analysis tree.



Filtering the pairs list

You can filter the pairs list by result, by element name and by path.

Filter by result

Choose an entry from the “Pairs” list box.

Filter by element name

Apply this filter to show all pairs whose reference or compare element name contains the specified search string.

- 1 Enter the search string in the text box.
- 2 Click the “Apply filter” button.

Filter by path

Apply this filter to show all pairs whose reference or compare element contains the specified search string.

- 1 Enter a search string in the text box.

In this context, the path of an element is composed of the parent names of the element, starting with the root element. The parent names are separated by double backslash. Note that the path does not include the name of the reference or compare element itself.

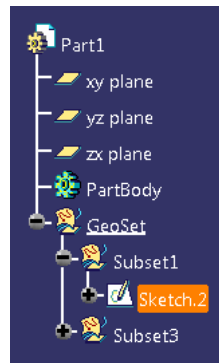
The search string can be the path in full or a substring. See also the examples below.

- 2 Activate the “Filter by path” button.
- 3 Click the “Apply filter” button.

Example

- The path of the highlighted element Sketch.2 in the image below is:

Part1\\GeoSet\\Subset1



- You can use also a substring of the path as a search expression. The following search string can be used to display all pairs containing elements whose parent is Subset1 or Subset2 inside GeoSet:

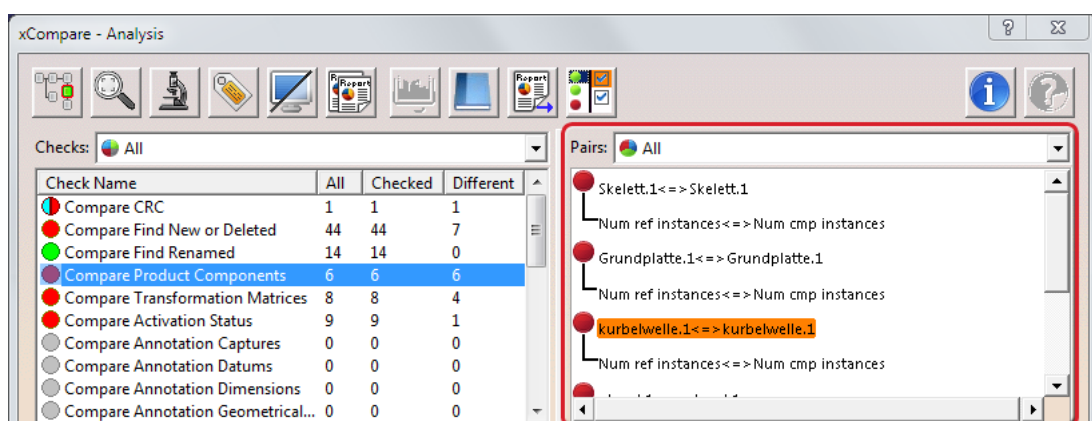
\\GeoSet\\Subset

Opening product component reports in the analysis window

When comparing products that contain components, xCompare generates a report for the product and a separate report for each checked component of the product.

You can open the component report while the product report is open in the analysis window.

- 1 Open the report of the product in the analysis window.
- 2 In the “Checks” list, select the “*Compare Product Components*” check.
- 3 In the “Pairs” list, mark the pair of components for which you want to display the report.



- 4 Click the “Show report for product component” button.
- The analysis window shows the report for the marked pair of components.
- 5 To return to the report of the parent product, click “OK”.

7.3 Fine Analysis for visualizing geometrical differences

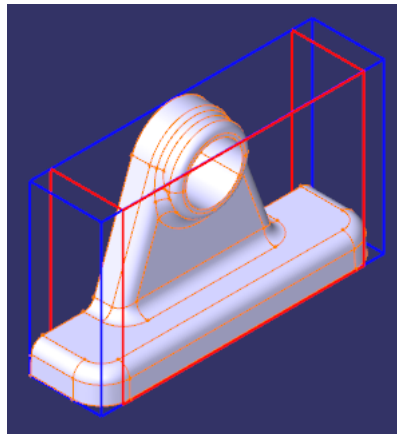
7.3.1 Fine Analysis in 3D

The fine analysis tool displays marking elements that visualize geometrical differences between reference and compare model.



With the “Fine Analysis” button activated, click on a pair to display the marking elements directly in the CATIA geometry area.

Example The image below shows the fine analysis marking elements for two bodies with different bounding boxes.



Fine analysis marking elements are displayed temporarily and do not change the model. Marking elements disappear when you select a different sub-node or deactivate the fine analysis tool.

To add fine analysis marking elements permanently, use the “Create permanent marking elements” button.



➤ “Show fine analysis markings for selected pair” button, page 44

➤ “Create permanent marking elements” button, page 44

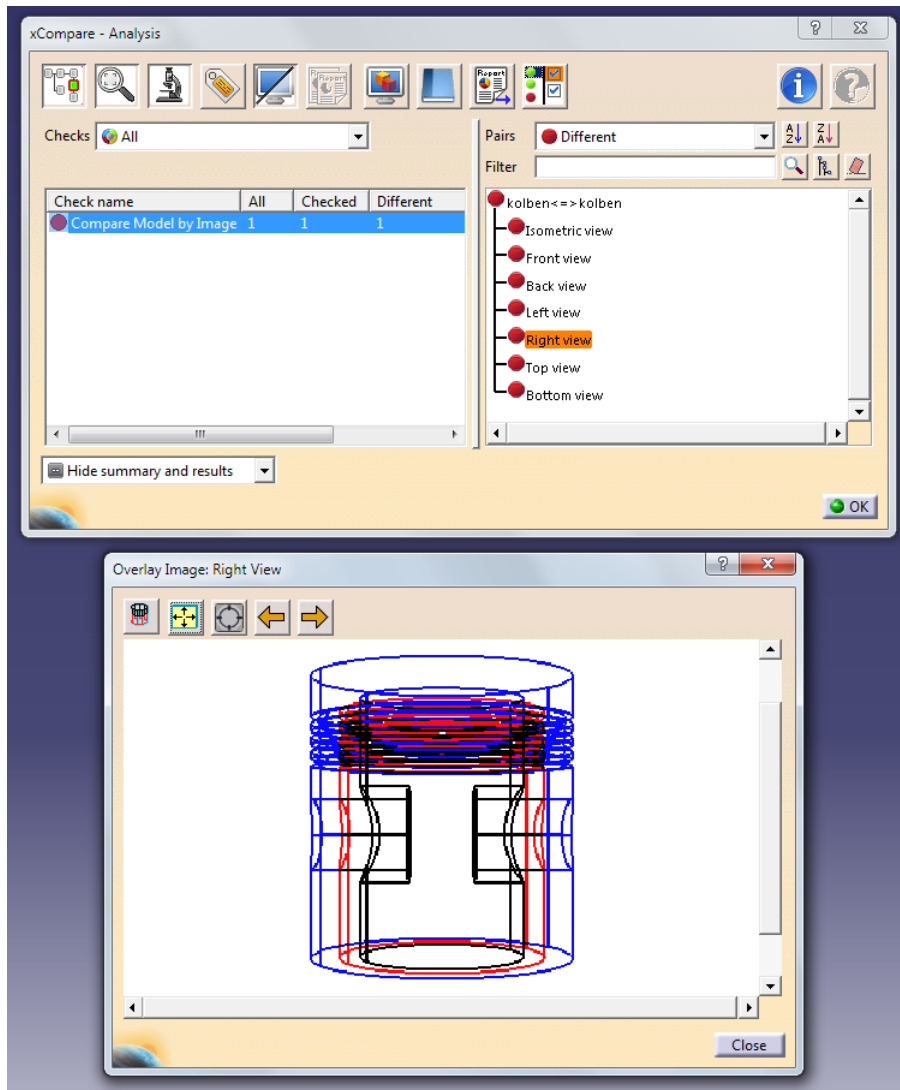
7.3.2 Fine analysis for the Compare Model by Image check

The Compare Model by Image check compares pixel images of defined views of the reference and compare model.

➤ *Compare Model by Image*, page 104

To inspect the differences between the pixel images, do the following:

- 1 In the analysis window, select the *Compare Model by Image* check.
- 2 In the pairs list, select a defined view.
- 3 Activate the “Mark differences in geometry area” button .
 - The captured images are shown in a new window.
- 4 To switch between defined views, select a different entry from the pairs list.



Identical contours are shown as black pixels. Contours that appear only in the reference image are shown in blue. Contours that appear only in the compare image are shown in red.

You can adjust the display in various ways:

- To hide or show identical contours (black pixels), select or deselect the “Hide/show pixels which are the same” button .
- To zoom in or out with a three-button mouse, hold down the middle and right mouse button, and drag the mouse.
- To zoom in or out with a wheel mouse, hold down the [Ctrl] key while you scroll with the mouse wheel.
- To move the image around, hold down the middle button or wheel button, and drag the mouse.
- To fit the image to the window, click the “Reframe image” button .

Finding small differences

While all differences between reference and compare image are shown as blue and red pixels, small differences can be easily overlooked.

To find small differences between the reference and compare image, select the “Highlight small differences” button  (Fig. 1).

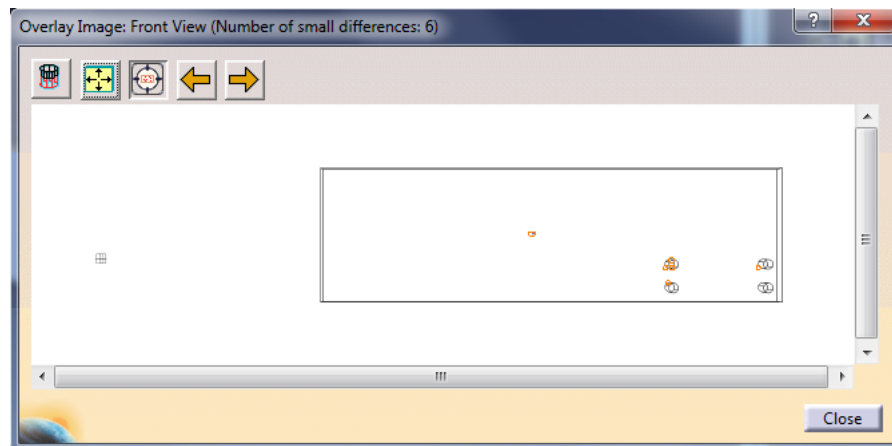


Fig. 1: Overview of small differences. The small differences are highlighted with orange circles and rectangles.

To zoom on small differences, click the “Zoom to next small difference” or “Zoom to previous small difference”   buttons. If an area of more than one pixel is different, it is surrounded by a rectangle. If a single pixel is different, it is surrounded by a circle (Fig. 2).

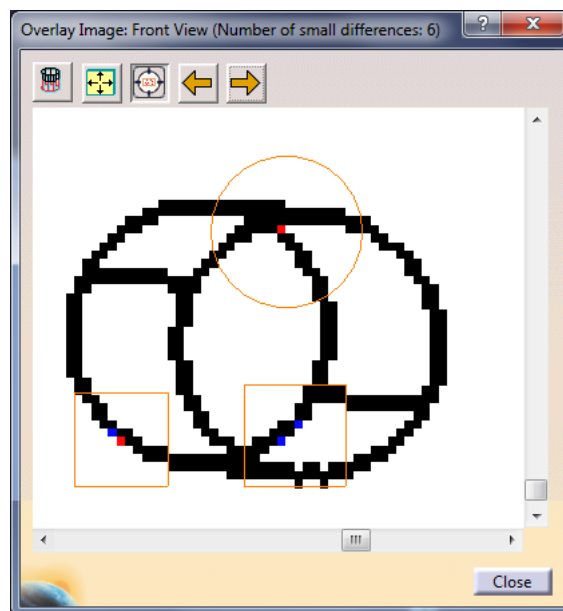


Fig. 2: The circle indicates a single different pixel. The rectangles indicate areas of two or more different pixels in close proximity.

The number of small differences is displayed in the title bar.

To return to the overview, click the “Reframe image” button .



NOTE: Small differences are highlighted if the number of different pixels in close proximity is less than 0.01% of the total number of pixels in the image.

Differences consisting of a larger number of pixels are not highlighted. They are usually visible without additional highlighting.

7.4 Enhanced visualization

With the Enhanced Visualization tool, you can visualize geometrical differences directly in the active document window. Enhanced visualization is only available when comparing V5 models.



- 1 In CATIA, activate the document window in which you want to display the enhanced visualization. The active document window can be the reference or compare document window, or any other document window in the current CATIA session.
- 2 In xCompare, open the report to be displayed.
- 3 In the analysis window, select what to visualize:
 - To show differences between a particular pair of entities, select a check, then select the pair of entities.
 - To show all differences with respect to a particular check, select a check but no pair of entities. In this case, only fading will be available.
- 4 Click the “Enhanced visualization” button.
- 5 In the “Enhanced Visualization” dialog, you can select between the following visualization functions:



Fading The selected reference and compare entities are shown as an overlay in the active document window. You can change transparency and color of the reference and compare entity.

Basic For the selected pair, differences of the respective other entity are visualized as points, triangles, or 3D faces in the active document window. In basic mode, enhanced visualization uses the 3D accuracy from CATIA application settings.

Advanced For the selected pair, differences of the respective other entity are visualized as points, triangles, or 3D faces. In advanced mode, you can adjust the accuracy of the visualization with the “Tolerance” slider. To increase the accuracy of the visualization, set a lower tolerance value, then click the “Update” button.

➤ *Examples of enhanced visualization, page 41*

➤ *Reference to the Enhanced Visualization dialog, page 47*

- 6 To visualize other pairs or checks with the same enhanced visualization settings, click the “Close” button in the “Enhanced Visualization” dialog. When you select a check or pair in the analysis window, the visualization is applied to the selection.

- 7 To disable enhanced visualization, deselect the “Enable/Disable” button for the respective visualization mode in the “Enhanced Visualization” dialog. Enhanced visualization is also disabled when you close the analysis window.

Examples of enhanced visualization

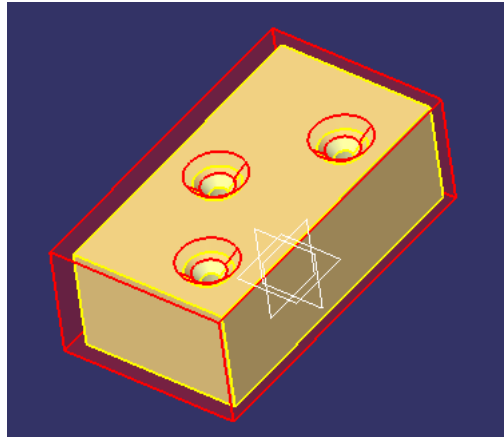


Fig. 1: Fading

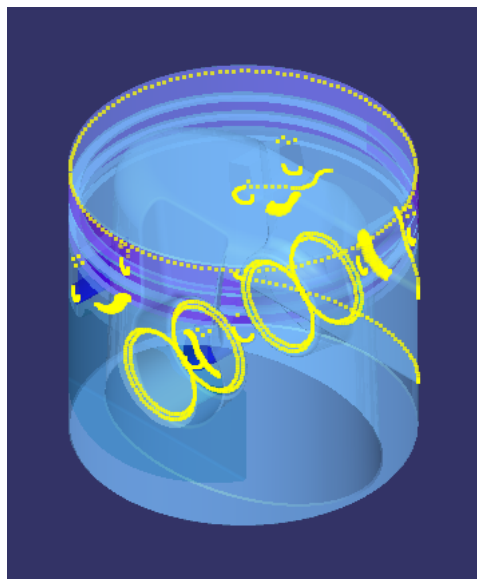


Fig. 2: Points in basic or advanced visualization mode

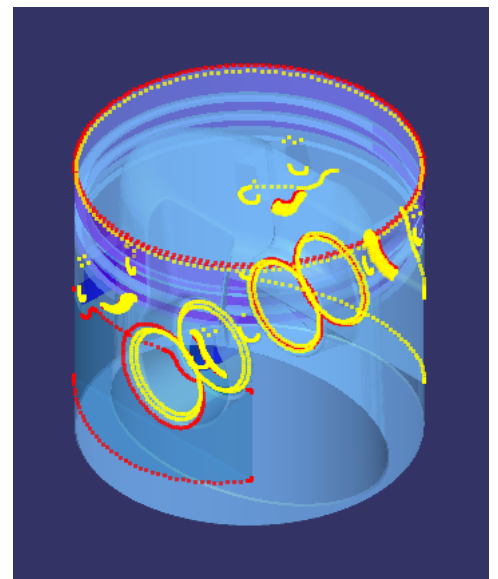


Fig. 3: Pairs of points in basic or advanced visualization mode

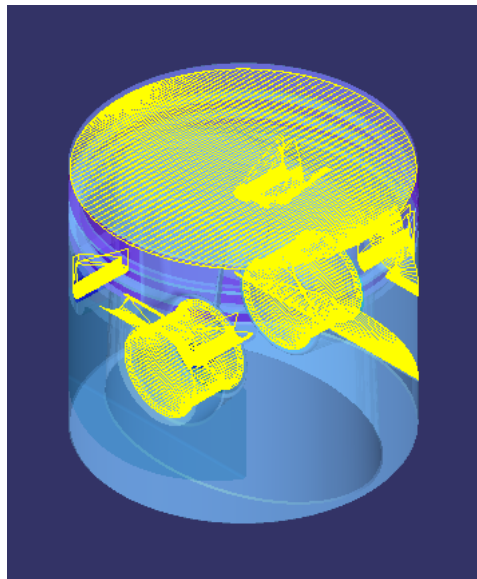


Fig. 4: Tessellation triangles in basic or advanced visualization mode

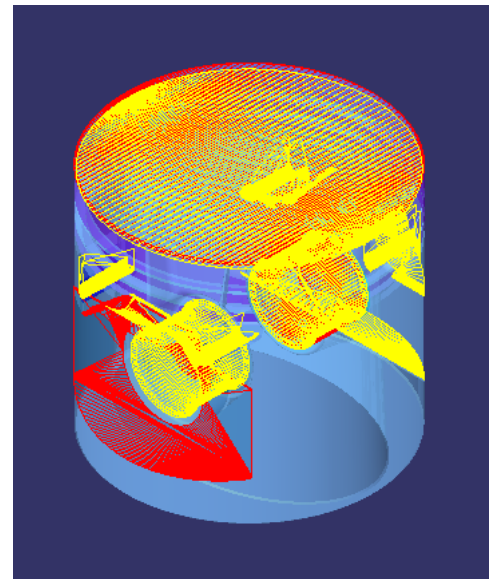


Fig. 5: Pairs of tessellation triangles in basic or advanced visualization mode

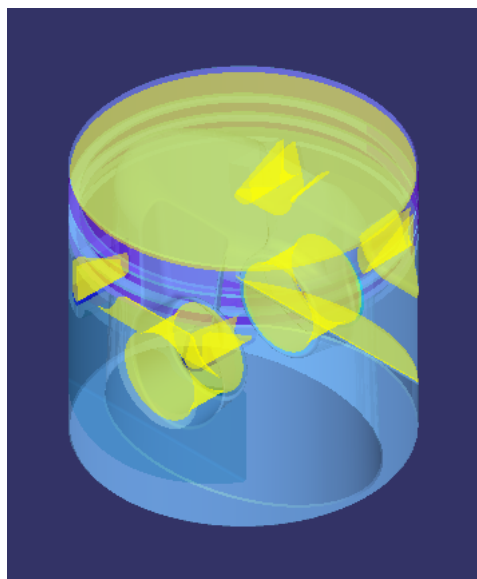


Fig. 6: 3D faces in basic or advanced visualization mode

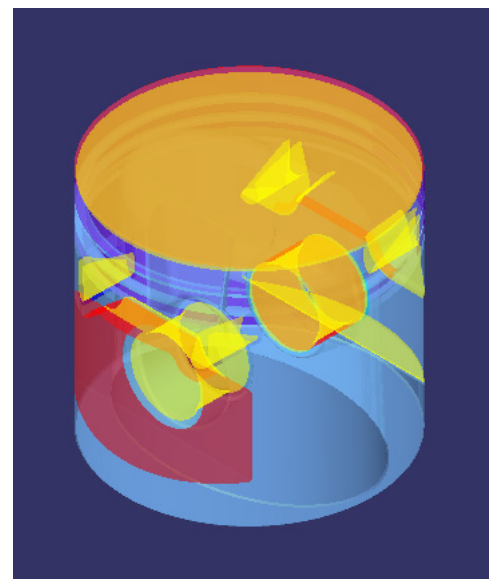
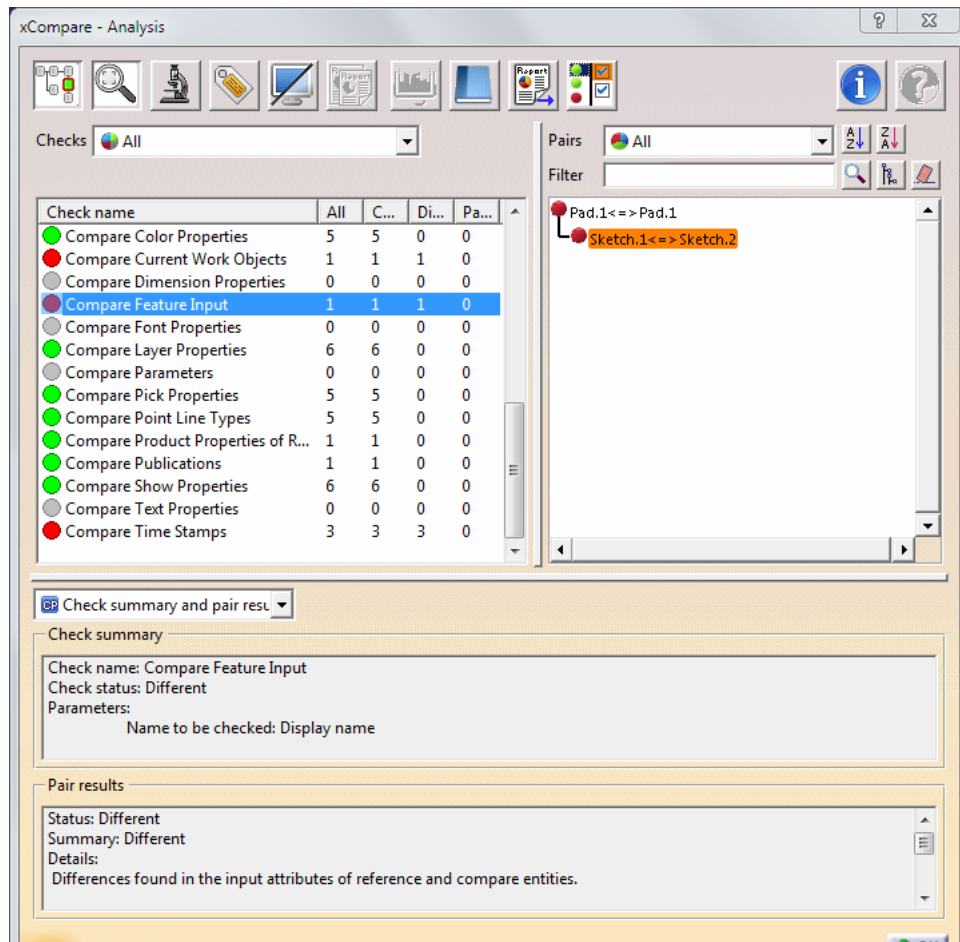


Fig. 7: 3D faces in basic or advanced visualization mode

7.5 Reference to the analysis window

The analysis window lists all checks from the configuration and the results for the pairs of models that have been checked. In the analysis window, you can also find tools for analyzing the compared models.



NOTE: Some functions in the analysis window are not available if the reference or compare model are not open in CATIA.

Analysis toolbar



“Center graph on selected pair” button Automatically center the CATIA specification tree on the reference or compare entity of the selected entity pair, and highlight entity in geometry view.



“Zoom on selected pair” button Automatically zoom the model in CATIA onto the reference or compare entity of the selected entity pair.



“Show fine analysis markings for selected pair” button Show marking elements for the selected entity pair directly in the CATIA geometry area.

➤ *Fine Analysis for visualizing geometrical differences, page 37*



“Create permanent marking elements” button Add a geometrical set containing all xCompare fine analysis elements to the active document (reference or compare document).

The name of the geometrical set is “xCompare-Markup”.



“Transparency” button Use transparency to reveal covered elements in the CATIA geometry area. Model data remains unchanged; the display will be reset when closing the window.



“Show report for product component” button Show the report for a product component.

This button is only available when viewing the report for a product that has been checked with Compare Product Components.

➤ *Opening product component reports in the analysis window, page 36*



“Enhanced visualization” button Display the “Enhanced Visualization” window with visualization options for reference and compare document.

➤ *Reference to the Enhanced Visualization dialog, page 47*



“Show captured images for report” button Show the “Show image” window, where you can capture different images of the marked pair of components.

To hide the “Show Image” window, click this button again.

➤ *Capture user-defined images for the report, page 54*

➤ *Reference to the “Show captured image” dialog, page 55*



“Show report in HTML browser” button Generate captures of entities with differences (if required) and open the report in an HTML browser.

The standalone HTML report file is displayed, if available. Otherwise the XML report file is displayed.



“Switch result viewer” button If this button is not selected, results are arranged by check. Checks are listed in the left column. The respective checked pairs are listed in the right column.

If this button is selected, results are arranged by pairs. Pairs are listed in the left column. The checks performed on these pairs are listed in the right column.



“Info” button Display general information about the check (configuration, session settings, overall check status).

“Help” button Currently not available.



“Sort A-Z” button Sort the list on the right in alphabetical order. Deselect the button to restore the sort order according to the specification tree.

When results are arranged by checks, use this button to sort the “Pairs” list.

When results are arranged by pairs, use this button to sort the “Checks” list.



“Sort Z-A” button Sort the pairs list in reverse alphabetical order. Deselect the button to restore the sort order according to the specification tree.

When results are arranged by checks, use this button to sort the “Pairs” list.

When results are arranged by pairs, use this button to sort the “Checks” list.

Checks list

“Checks” list List of all checks that have been performed, as specified in the configuration. The color bullet with each item indicates the check status.

Click an item to display detailed results.

➤ *Check status*, page 34

To filter the list by status, select an entry from the “Checks” list box.

When results are arranged by checks, click the column heads to sort the list.

When results are arranged by pairs, click the “Sort A-Z” and “Sort Z-A” buttons to sort the list.

Pairs list

“Pairs” list List of the pairs of entities to which the currently selected check has been applied. The color bullet indicates the check status.

➤ *Pair check status*, page 34

Click an item to display detailed results. If available, click a sub-node to display a detailed description for the given aspect.

When results are arranged by pairs, click the column heads to sort the list.

When results are arranged by checks, click the “Sort A-Z” and “Sort Z-A” buttons to sort the list.

“Pairs” list box Choose an entry to filter the pairs list by result.

“Filter” text box Enter a search string to show only pairs of elements whose names or parent names contain this string.

↗ *Filtering the pairs list, page 35*



“Apply filter” button Apply the filter.



“Filter by path” button If this button is not selected, the search string applies to element names. If this button is selected, the search string applies to the path of elements.



“Clear filter” button Clear the filter by path and element name.

Detailed results

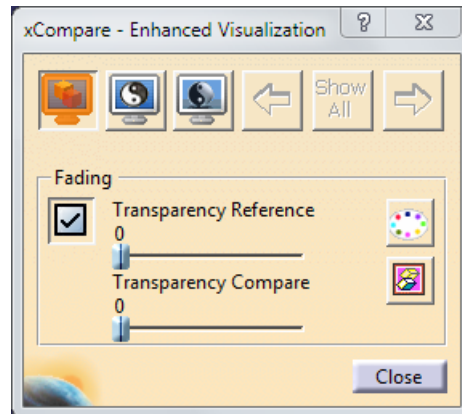
“Details” list box Click to display or hide the check or pair summary, or both.

“Check details” text box Displays the check status and the check parameters specified in the configuration for the check selected in the *“Checks” list*, page 45.

“Pair details” text box Displays the check status and lists the check results in detail for the pair of entities or a sub-node selected in the *“Pairs” list*, page 45.

↗ Keyboard shortcuts for the analysis window: *Analysis window shortcuts*, page 127

7.6 Reference to the Enhanced Visualization dialog



Enhanced visualization provides three visualization modes. The window shows different controls depending on the selected visualization mode.

Controls in all visualization modes (Fading, Basic, and Advanced)



“Fading” button Click to show the selected reference and compare entities as an overlay in the active document window.



“Show difference – Basic” button Click to visualize differences between the selected reference and compare entity as points, triangles, or 3D faces in the active document window.



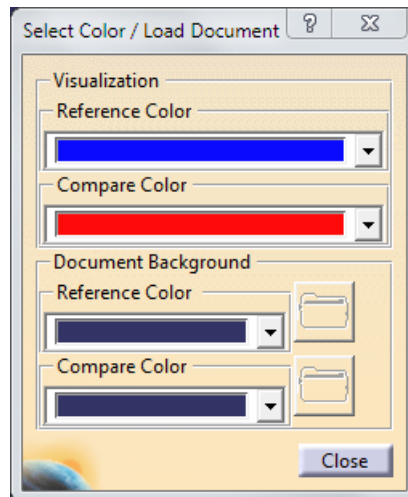
“Show difference – Advanced” button Click to visualize differences between the selected reference and compare entity as points, triangles, or 3D faces in the active document window.



“Enable/Disable...” check box If this option is selected, the enhanced visualization is shown in the current window. If this option is not selected, the enhanced visualization is not shown.



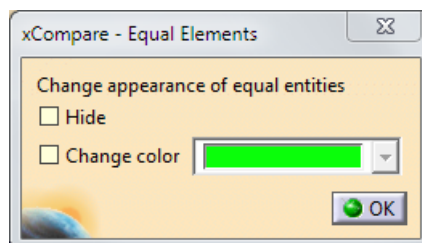
“Set colors visualization” button Click to show the “Set color” dialog, where you can select the color of reference and compare entities and the background colors of the reference and compare document windows.



- In “Visualization”, select the colors for marking elements of reference and compare entities.
- In “Document background”, select background colors for the reference and compare document. This helps to distinguish the two windows when viewed side by side.
- If the reference or compare document has been closed, click the respective “Load document” button to reopen the document.



“Modify graphic properties of equal features” button Click this button to show the “Equal features” dialog, where you can change the appearance of pairs of entities that are identical:



- To hide pairs of identical entities, select the “Hide” option. Deselect the “Hide” option to leave the visibility of pairs of identical entities unchanged.
- To change the color of identical entities, select the “Color” option and choose the color to be applied from the list box. Deselect the “Hide” option to leave the color of pairs of identical entities unchanged.



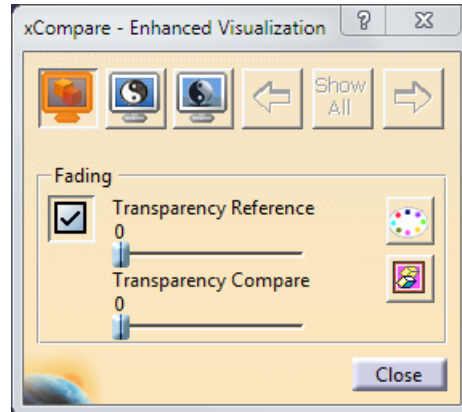
CAUTION: These changes to visibility and color remain even after closing the analysis window.

If you do not want to keep these changes, save pending changes to the model before using this function, and do not save the changed model afterwards.

“Close” button Click to close the dialog.

If an enhanced visualization is enabled, it stays active when the dialog is closed. To disable enhanced visualization, deselect the “Enable/Disable” button in the dialog.

Fading visualization mode



“Transparency reference” slider Use this slider to adjust the transparency of the selected reference entity.

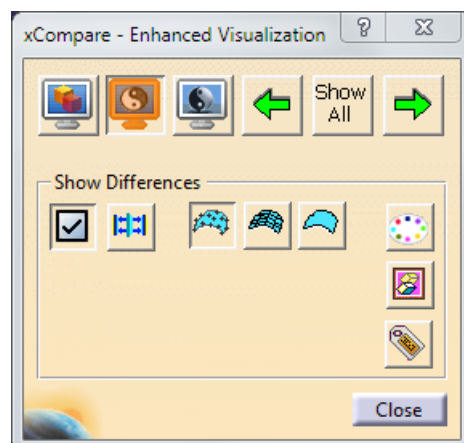
“Transparency compare” slider Use this slider to adjust the transparency of the selected compare entity.



NOTE: A change in transparency is only visible with the following CATIA application setting:

In “Tools” > “Options” > “General” > “Display” > “Performance”, the “Transparency quality” option must be set to “High”. You have to restart CATIA for this setting to take effect.

Show differences – basic mode





“Show previous difference”/“Show all differences”/“Show next difference” buttons If more than one different region is found in the pair of entities, you can show marking elements for this particular region or for all different regions by clicking the respective buttons.



“Show all differences” button Select this button to show marking elements for both reference and compare entities in the active window.

Deselect this button to show marking elements only marking elements for the compare entity if the reference document is active, or to show only marking elements for reference entity if the compare document is active.



“Tessellation points”/“Tessellation triangles”/“3D faces” buttons

Select one of these buttons to show the differences in the respective other entity as points, triangles, or 3D faces, respectively.



“Create permanent marking elements” button Select this button to add the currently displayed marking elements permanently to a geometrical set to the active document. This requires that the active document is either the reference document or the compare document.

The name of the geometrical set is “xCompare-ShowDifferences-Markups”.

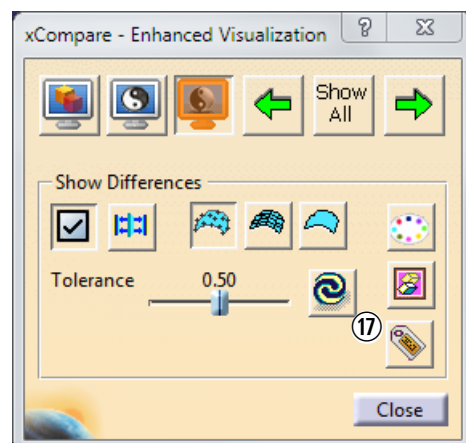


NOTE: The accuracy of enhanced visualization in basic mode depends on the “3D Accuracy” setting in CATIA:

“Tools” > “Options” > “General” > “Display” > “Performance”

A smaller fixed “3D Accuracy” value results in a more accurate calculation; at the same time, computational effort and run time increase.

Show differences – advanced mode





“Show previous difference”/“Show all differences”/“Show next difference” buttons If more than one different region is found in the pair of entities, you can show marking elements for this particular region or for all different regions by clicking the respective buttons.



“Show/Hide markings in pairs” button Select this button to show marking elements for both reference and compare entities in the active window.

Deselect this button to show marking elements only marking elements for the compare entity if the reference document is active, or to show only marking elements for reference entity if the compare document is active.



“Tessellation points”/“Tessellation triangles”/“3D faces” buttons

Select one of these buttons to show the differences in the respective other entity as points, triangles, or 3D faces, respectively.



“Create permanent marking elements” button Select this button to add the currently displayed marking elements permanently to a geometrical set to the active document. This requires that the active document is either the reference document or the compare document.

The name of the geometrical set is *“xCompare-ShowDifferences-Markups”*.

“Tolerance” slider Use this slider to adjust the accuracy of the enhanced visualization. A small tolerance value corresponds to a high accuracy. Click the “Update” button to apply the changed tolerance.



“Update” button Click this button to apply the tolerance setting.

7.7 Reports viewed in an HTML browser

Reports can be viewed in an HTML browser independently from the xCompare application.

Open an existing report from within xCompare

- 1 Choose an existing report in the xCompare main window.
- 2 Click the “Open selected report” button.
- 3 In the analysis window, click the “Generate HTML report” button.
 - ▶▶ The report is displayed in a browser window.

Open an existing report from disk

You can open an existing report with extension `.qcmpreportxml` or `.html` directly in an HTML browser.

About report file formats

xCompare can create reports in XML format and as self-contained HTML files.

XML reports (extension `.qcmpreportxml`) are created for every check run. This report contains all results and can be viewed in the xCompare analysis window. It can also be viewed in a browser; for this purpose, these files are required:

- `TCACMPStyleSheetV2.xsl` stylesheet
- `TCACMPStyleSheet.xsl` stylesheet for reports created prior to xCompare V5 1.7.1.
- The folder of the same name as the report file, which contains captured images of differences and report files for product components (if applicable).
- The `TCACmpStyleSheetTemplate` folder, which contains common images.

All of these files are stored in the xCompare reports folder.

Self-contained HTML reports are created optionally. All information is stored in one HTML file. This type of report is particularly suitable for data exchange and storage in a PDM system, since there is only one file.

Note the browser requirements for viewing reports (see below).

Browser requirements

- To display XML reports, the browser must support HTML4, CSS2 and XSL transformation of local XML files.
- To display self-contained HTML reports, the browser must support XHTML 1.0 and base64-encoded image data.

The following browsers have been tested:

Browser	XML report	Self-contained HTML report
Microsoft Internet Explorer 6 and 7	Some restrictions	Not compatible
Microsoft Internet Explorer 8	Compatible	Not compatible
Microsoft Internet Explorer 9 and later	Compatible	Compatible
Mozilla Firefox 3 and later	Compatible	Compatible
Google Chrome 38 and later	Some restrictions	Compatible
Apple Safari	Compatible	Compatible

Interactive functions

To filter the report by result, choose the desired filter from the “Active filter” menu in the lower left corner of the window (Fig. 1). The filter function requires Javascript.

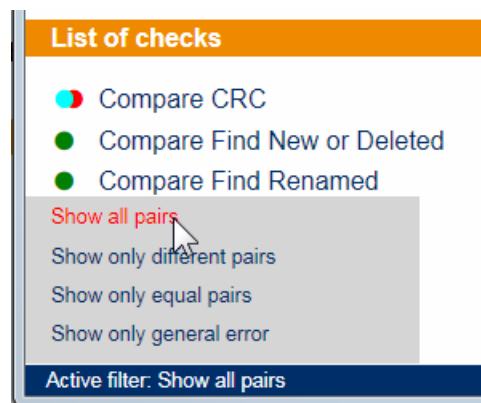


Fig. 1: “Active filter” menu in the report

When you click a detail image, an overview of the model is displayed in which the position of the reference or compare element is highlighted (Fig. 2).

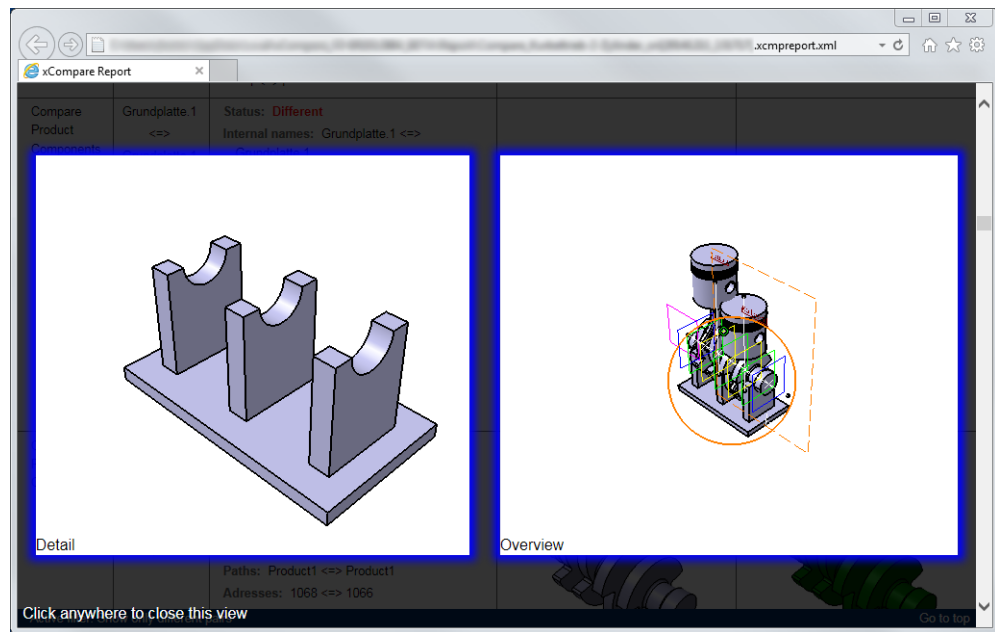


Fig. 2: Detail and overview images in the report

Capture user-defined images for the report

Images for the report are captured in a default view. You can manually capture a different view to replace the default image.

- 1 If no images have been captured yet for the report, click the “Show report in HTML browser” button in the analysis window.



After the default images have been captured, the report opens in a browser window. You can close the browser window.

- 2 In the analysis window, click the “Show captured images for report” button.



The dialog shows the current images for the selected pair of entities. No images are shown if the selected pair is equal, or if no images have been captured yet.

- 3 In the analysis window, select a pair of entities with differences.
- 4 In the respective document window, set the view of the entity to be captured.
- 5 In the “Show capture image” dialog, click the “Capture image” button for the reference or compare entity.



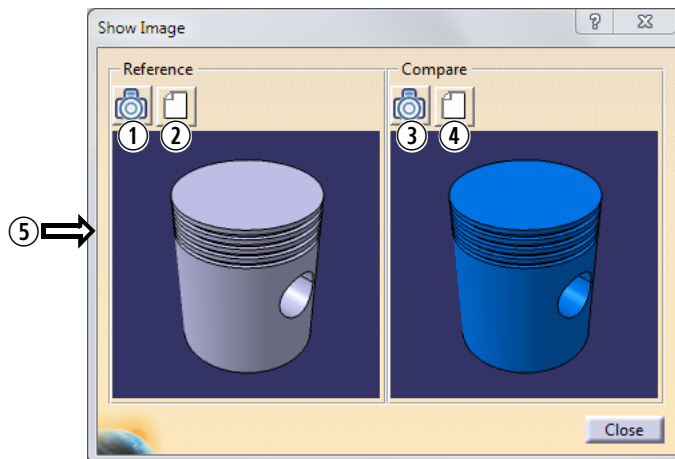
- 6 In the respective document window, drag a rectangle around the area that you want to capture.

► The new image has been captured.

If you want to revert to the default image of an entity, click “Capture default image” for the reference or compare entity.



Reference to the “Show captured image” dialog



The functions in this window are available only when a pair with differences is selected in the analysis window.

- ①  **“Capture custom image of reference entity” button** Click to change the captured image of the reference entity in the selected pair.
- ②  **“Capture default image of reference entity” button** Click to capture an image of the reference entity in the selected pair. The image is in default view, as initially captured by xCompare.
- ③  **“Capture default image of reference entity” button** Click to change the captured image of the compare entity in the selected pair.
- ④  **“Capture default image of compare entity” button** Click to capture a default image of the compare entity in the selected pair. The image is in default view, as initially captured by xCompare.
- ⑤ **Preview** Preview of images as shown in the report.

8 Organization of checks

8.1 Introduction

xCompare settings are organized in configurations. From the definitions given in a configuration, xCompare gets the information what and how to compare and which entities of a given model to compare.

A configuration defines:

- General settings for the xCompare application and user interface
- Set of available checks
- Values of check parameters
- Mapping rules

A check can have parameter values and a set of mapping rules.

8.2 Edit configurations

8.2.1 Create a configuration

Click the “Add configuration” button. 

►► The configuration has been added.

You can also create new configurations at the command line.

➤ *Generating a configuration file in batch mode, page 61*

8.2.2 Rename a configuration

- 1 Choose the configuration to be renamed in the “Configurations” list box.
- 2 Click the “Rename configuration” button. 
- 3 Click the “Configurations” list box.
- 4 Type the new name.
- 5 To confirm the new name, press [Enter].

8.2.3 Delete a configuration

- 1 In the configuration editor, select the configuration to be deleted in the “Configurations” list box.
- 2 Click the “Delete configuration” button. 
- 3 You are prompted to confirm deleting the configuration.

8.3 Editing checks

8.3.1 Deactivating and activating a check

You can deactivate checks in the configuration to exclude them from being processed.

To activate or deactivate a check, double-click its check box in the list of checks.

8.3.2 Defining check parameters

You can edit the check parameters for the selected check in the “Parameters” panel of the configuration editor.

8.3.3 Defining mapping rules

Mapping rules define what elements are compared to one another.

To edit mapping rules for the selected check, click the “Define mapping for the selected check” button in the configuration editor. 

8.3.4 Rename a check

To rename the currently selected check in the list of checks:

- 1 Click the “Rename selected check” button.
- 2 The “Rename” dialog contains names in all available languages. Mark the entry you want to change.
- 3 Click the marked entry again to make the name editable.
- 4 Type the new name. Press [Enter] to confirm the new text.

8.3.5 Duplicate a check

When you duplicate a check, you can perform variations of the same check during the same check run.

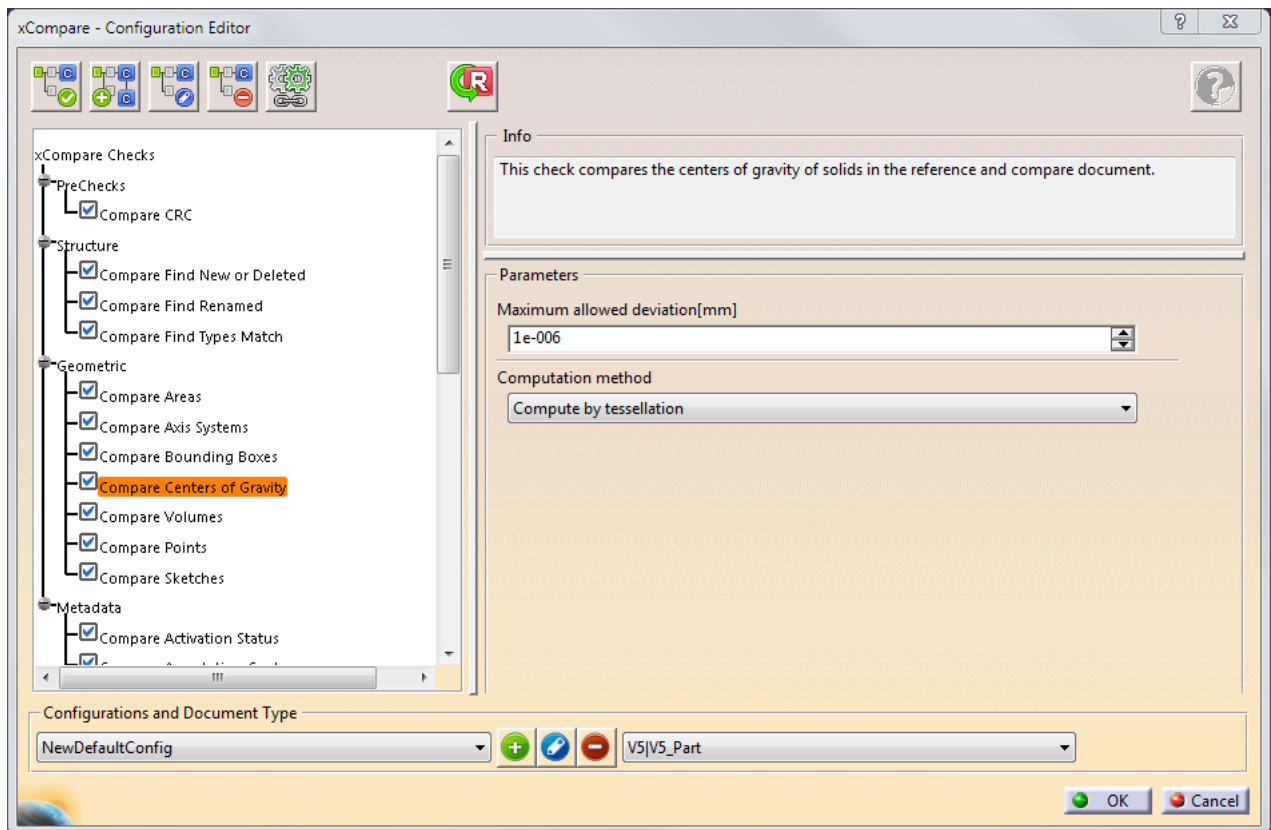
To duplicate the currently selected check in the list of checks, click the “Duplicate check” button. 

▶▶ A duplicate of the check has been added. Initially, the new check is deactivated. The new check has the same name, parameters, and mapping rules.

8.3.6 Delete a check

To delete the currently selected check in the list of checks, click the “Delete check” button. 

8.4 Configuration editor reference



 **“Enable/Disable selected check” button** Click to enable or disable the currently selected check.

 **“Duplicate selected check” button** Click to create an additional instance of the currently selected check. This allows you to perform the same check with different parameter settings.

 **“Rename selected check” button** Click to display a dialog where you can rename the currently selected check for any interface language. In the “Rename” dialog, click the list entry for a given language, then click the “Name column” of the same entry to edit the text.

 **“Remove selected check” button** Click to remove the currently selected check from the current configuration.

 **“Define mapping for selected check” button** Click to display the Mapping Editor where you can enable or disable mapping rules for the currently selected check.

➤ For a description of the Mapping Editor see *Mapping editor reference*, page 59.



“Update check templates” button Click to add an instance of every available check that is missing from the current configuration.

Use this function to add checks that have been removed from the configuration, or to add check that have become available in xCompare since you created the configuration.

“Show help” button Currently not available.

List of checks List of checks in this configuration. A selected check box indicates that the check is enabled.

To enable or disable a check, click the “Enable/Disable selected check” button, or double-click the check box of the list item.

To enable or disable all structure, geometry, or metadata checks, right-click the respective parent node in the list, and select “Enable checks” or “Disable checks” from the context menu.

“Info” box Displays a short description of the currently selected check.

“Edit” group box with controls Set the parameter values for the selected check in the current configuration.

“Configurations” combo box with buttons Select a configuration from the list.



“Add configuration” button To add a new configuration, click the black arrow in the lower right corner of the “Add configuration” button. Choose the desired type of configuration from the menu.

To add another configuration for the same types of models again, click the “Add configuration” button.



“Rename configuration” button To rename the currently selected configuration, click this button, then change the highlighted text in the list box. To apply the text, click the button again or press [ENTER]. You are prompted to confirm the action.



“Delete configuration” button To delete the currently selected configuration, click this button. You are prompted to confirm the action.

“Document types” list box Select a pair of document types. The list of checks is updated accordingly.

➤ Keyboard shortcuts: *Configuration editor shortcuts*, page 128

8.5 Mapping editor reference

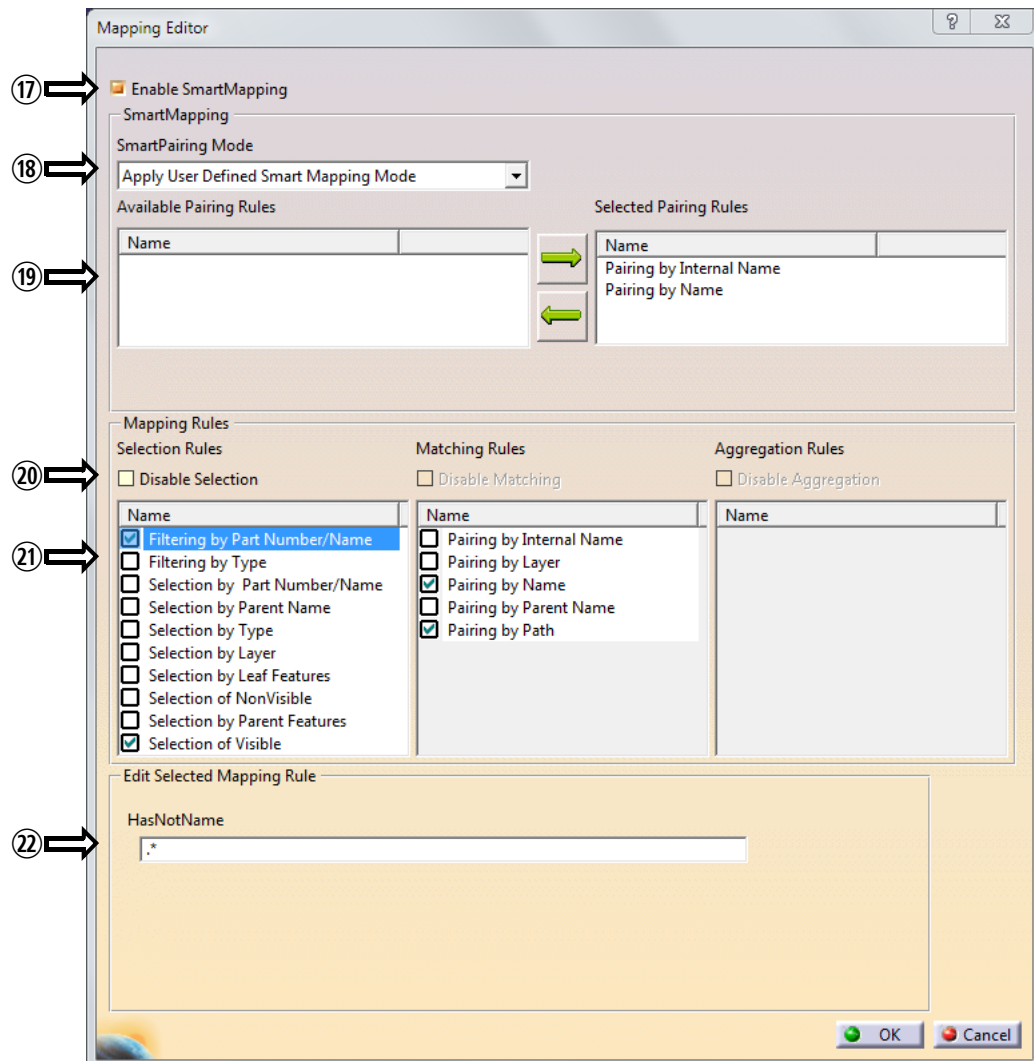
Use the mapping editor to select the mapping rules for building pairs. The selected rules apply to the currently selected check.

The mapping editor lists all available mapping rules for the check. Each check has a set of default mapping rules, which is used as preset.



TIP

- If you select additional mapping rules, mapping is more specific, which will narrow down the number of entities to be compared.
- If you deselect or disable mapping rules, mapping is less specific, therefore more pairs of entities can be formed. If no mapping rules are selected at all, all possible pairs of compare and reference entities are compared with each other.



- ①⑦ “Enable Smart Mapping” check box Select this check box to enable smart mapping.



NOTE: For configurations created with xCompare V5 1.5.1 or earlier, smart mapping cannot be enabled using the configuration editor.

- ①⑧ “Smart Pairing Mode” list box Select the set of pairing rules for smart pairing:

“Apply GEO Smart Mapping Mode” Predefined set of rules in which geometrical similarity has the highDeest priority.

The predefined rule set is: 1. Pair by Bounding Elements, 2. Pair by Position (for V5 Products only), 3. Pair by Name, 4. Pair by Internal Name.

“Apply META Smart Mapping Mode” Predefined set of rules in which element names have the highest priority.

The predefined rule set is: 1. Pair by Name, 2. Pair by Internal Name, 3. Pair by Bounding Elements, 4. Pair by Position (for V5 Products only).

“Apply User Defined Smart Mapping Mode” User-defined set of rules. For editing the user-defined set of rules, see the “Available pairing rules”/“Selected pairing rules” value list below.

- ⑲ **“Available pairing rules”/“Selected pairing rules” value list** When using a predefined set of pairing rules for smart pairing, the “Selected pairing rules” list shows the rules sorted by priority in descending order. Predefined sets of pairing rules cannot be changed.

When using the user-defined set of rules, mark a rule and click an arrow button to add the rule to the selection, or to remove it from the selection. To change the order, remove all rules from the selection, and add them again sorted by priority in descending order.

- ⑳ **“Disable selection”, “Disable matching”, “Disable aggregation” check boxes** Select a check box to disable all selection rules, all pairing rules, or all aggregation rules for the currently selected check, respectively.

↗ See also *Override Rules*, page 126

- ㉑ **“Selection by ...”, “Pairing by ...”, “Aggregation by ...” check boxes** Select to activate the respective selection rule, pairing rule, or aggregation rule. Double-click to select or clear these check boxes.

- ㉒ **“Edit Selected Mapping Rule”** If the highlighted mapping rule has parameters, you can edit them here.

8.6 Generating a configuration file in batch mode

Apart from creating new configurations interactively in the configuration editor, you can generate configurations at the command line. The resulting default configuration file contains one instance of every available check.

Use the following command to initialize a CATIA environment and to create a default configuration file.

Command line syntax

```
<CATIA_Install_Path>\code\bin\CATStart.exe -env <Environment_Name>
-direnv <Environment_Path> -run "TCACmpCoreBatch.exe -c <Document_Pair>
<Output_File>"
```

<CATIA_Install_Path> Path of the CATIA V5 installation

<Environment_Name> Name of the CATIA V5 environment with xCompare integration (environment file name without the .txt extension)

<Environment_Path> Path of the CATIA V5 environment directory

<Document_Pair> Specify the document types for which the configuration is created. The following keywords can be used:

Keyword	Description
V5:V5Part	Compare V5 Part with V5 Part
V5:V5Product	Compare V5 Product with V5 Product
V5CGR:V5CGR	Compare V5 CGR with V5 CGR

<Output_File> Full path of the configuration to be generated. If the full path contains blanks, set the full path in a pair of three quotation marks """"..."""" (see example).

Example

```
c:\catiaV5\B19\intel_a\code\bin\CATSTART.exe -env xCompare_V5R19_171
-direnv "C:\Documents and Settings\All Users\Application Data\
DassaultSystemes\CATEnv_R19" -run "TCACmpCoreBatch.exe -c V5:V5Part
""c:\Program Files\TranscatPLM\xCompare_V5R19_171\config\MyConfigV5_
V5Part.xcmpconfig.xml"" "" "
```

8.7 Manually editing the configuration file

You can use an XML editor to edit a configuration file.

➤ See Chapter 12 *Manually editing the configuration file*, page 129

9 Checks and Parameters

9.1 Precheck

9.1.1 Compare CRC

Availability

Compare V5 Drawing with V5 Drawing

Compare V5 Part with V5 Part

Compare V5 Product with V5 Product

Description

This check calculates and compares file-based checksums of the reference and compare document. It is possible to skip the remaining checks if the checksums are equal.

The result of this check does not contribute to the compare status. The compare status can be *“Equal”* even if the checksums are different.

Parameters

“Perform all checks even if the checksums of reference and compare document are equal” Deselect this option to skip the remaining checks if the checksums are equal. Select this option to process all checks.

“Message to display if checksums are equal” Specify a message to appear in the report if the checksums are equal.

“Message to display if checksums are different” Specify a message to appear in the report if the checksums are different.

Result values

“Checksum of reference document” Checksum of the reference document

“Checksum of compare document” Checksum of the compare document

9.2 Structure

9.2.1 Compare Find Types Match

Availability

Compare V5 Part with V5 Part

Description

This check finds entities with identical names but different entity types.
In V5 Parts, solid features are compared regarding their CAA types. All other entities are compared regarding their xCompare entity types.

Parameters

No parameters available.

Result values

RefType Type of the reference entity

CmpType Type of the compare entity

9.2.2 Compare Find New or Deleted

Availability

Compare V5 Part with V5 Part
Compare V5 Product with V5 Product
Compare V5 Drawing with V5 Drawing

Description

This check finds entities without a counterpart in the other model.

Compare entities are marked as “new” if there is no equivalent entity in the reference model.

Reference entities are marked as “deleted” if there is no equivalent entity in the compare model.

Parameters

No parameters available.

9.2.3 Compare Find Renamed

Availability

Compare V5 Drawing with V5 Drawing

Compare V5 Part with V5 Part

Compare V5 Product with V5 Product

Description

This check finds entities with identical internal names and paths, but with different names (identifiers). Such entities are marked as “renamed”.

Parameters

No parameters available.

Result values

RefName Name of the reference entity

CmpName Name of the compare entity

9.2.4 Compare Product Components

Availability

Compare V5 Product with V5 Product

Description

This check compares components of products according to the selected configuration. If a product contains several instances of the same component, only one pair of instances is checked. The number of component instances is shown in the check result.

Parameters

“Compare V5 Part - V5 Part components” Select this option to compare V5 Parts with each other.

“V5 Part - V5 Part configuration” Choose a configuration for comparing V5 Parts.

“Compare V5 CGR - V5 CGR components” Select this option to compare V5 CGR models with each other.

“V5 CGR - V5 CGR configuration” Choose a configuration for comparing V5 CGR models.

“Temporary working path” Path where temporary files are stored. By default, temporary files are stored in the directory specified by system variable %TEMP%.

“Maximum number of simultaneous processes” Maximum number of processes to be run in parallel when checking product components.

Result values

“Component report path” File name of the check report of the product component.

9.3 Geometric

9.3.1 Compare Areas

Availability

Compare V5 Part with V5 Part

Description

This check compares the surface area of shells and solids from the reference model with the surface area of shells and solids from the compare model.

Parameters

“Maximum deviation from mean value [%]” Maximum allowed deviation from the mean surface area in percent.

Definition of the mean area A:

$$A = \frac{A_{\text{Entity, cmp}} + A_{\text{Entity, ref}}}{2}$$

Definition of the deviation d:

$$d = \left| \frac{A_{\text{Entity}} - A}{A} \right| \cdot 100\%$$

“Computation method” Choose a method for determining the surface area of V5 entities:

- *“Compute in CATIA”*: Calculate using the built-in CATIA method
- *“Compute by tessellation”*: Calculate the area of tessellated entities in xCompare.

Result values

“Area of reference entity” Area of the reference entity [mm²]

“Area of compare entity” Area of the compare entity [mm²]

“Absolute difference between areas” Absolute difference between areas of reference and compare entity [mm²]

“Mean value of area” Mean value of the reference and compare areas [mm²]

“Deviation” Deviation from the mean value [%]

9.3.2 Compare Axis Systems

Availability

Compare V5 Part with V5 Part

Description

This check compares axis systems in the reference and compare documents.

Parameters

“Comparison tolerance for origin [mm]” Distance [mm] within which the origins of axis systems in the reference and compare document are considered equal.

“Comparison tolerance for directions [deg]” Angle [deg] between corresponding direction vectors within which the directions are considered equal.

Result values

Ref_OrigX, Ref_OrigY, Ref_OrigZ Coordinates of the origin of the reference axis system

Ref_Dir1X, Ref_Dir1Y, Ref_Dir1Z, Ref_Dir2X,... Coordinates of the three unity vectors that form the reference axis system

Cmp_OrigX, Cmp_OrigY, Cmp_OrigZ Coordinates of the origin of the compare axis system

Cmp_Dir1X, Cmp_Dir1Y, Cmp_Dir1Z, Cmp_Dir2X,... Coordinates of the three unity vectors that form the compare axis system

9.3.3 Compare Bounding Boxes

Availability

Compare V5 Part with V5 Part

Description

This check compares the bounding boxes of entities in the compare and reference model. For geometrical sets, a bounding box for the entire geometrical set is calculated

Parameters

“Comparison tolerance [mm]” Maximum allowed distance [mm] between corresponding coordinates of the reference and compare bounding box.

Result values

“Bounding box of reference entity (Xmin), “... (Ymin), “... (Zmin)” Coordinates of the lower corner point for the reference entity

“Bounding box of reference entity (Xmax), “... (Ymax), “... (Zmax)” Coordinates of the upper corner point for the reference entity

“Bounding box of compare entity (Xmin), “... (Ymin), “... (Zmin)” Coordinates of the lower corner point for the compare entity

“Bounding box of compare entity (Xmax), “... (Ymax), “... (Zmax)” Coordinates of the upper corner point for the compare entity

9.3.4 Compare CGRs

Availability

Compare V5 CGR with V5 CGR

Description

This check compares tessellated representations of the reference and compare models. Points are distributed on the tessellated representation from the compare model and projected onto the tessellation from the reference model, and vice versa.

Parameters

“Belonging tolerance [mm]” Maximum distance between points to form a possible pair of reference and compare points.

“Identical tolerance [mm]” Maximum distance between a pair of reference and compare points to be considered identical.

“Arrangement of projection points on triangles” Choose what discretization points to create for every triangle: *“Vertices of triangle”*, *“Vertices and center of triangle”*, or *“Vertices, centers of edges, and center of triangle”*.

Result values

numPointsToProjectOnRef Number of points on the reference entity to be projected onto the compare entity

numPointsToProjectOnCompare Number of points projected onto the compare entity

numMissingPointsOnRef Number of points on the reference entity with no counterpart on the compare entity

numMissingPointsOnCmp Number of points on the compare entity with no counterpart on the reference entity

numPointsTooMuchDist Number of points outside the identical tolerance

MaxDistance Maximum distance between any corresponding points on reference and compare entity

9.3.5 Compare Centers of Gravity

Availability

Compare V5 Part with V5 Part

Description

This check compares the centers of gravity of solids in the reference and compare models.

Parameters

“Maximum allowed deviation” Maximum allowed distance [mm] between centers of gravity.

“Computation method” Choose a method for calculating the center of gravity:

- *“Compute by tessellation”*: Calculate using tessellated entities
- *“Compute in CATIA”*: Use the built-in CATIA function

Result values

“Center of gravity of reference entity (X)”, “... (Y)”, “... (Z)” Coordinates of the center of gravity for the reference entity

“Center of gravity of compare entity (X)”, “... (Y)”, “... (Z)” Coordinates of the center of gravity for the compare entity

Deviation Distance between the centers of gravity of reference and compare entity

9.3.6 Compare Volumes

Availability

Compare V5 Part with V5 Part

Description

This check compares the volume of solids in the reference and compare models.

Parameters

“Maximum deviation from mean value” Maximum percentage of deviation from the mean value.

“Computation method” Choose a method for calculating the center of gravity:

- *“Compute by tessellation”*: Calculate using tessellated entities
- *“Compute in CATIA”*: Use the built-in CATIA function

“Maximum deviation from mean value [%]” Maximum allowed deviation from the mean volume in percent.

Definition of the mean volume V:

$$V = \frac{V_{\text{Entity, cmp}} + V_{\text{Entity, ref}}}{2}$$

Definition of the deviation d from the mean volume:

$$d = \left| \frac{V_{\text{Entity}} - V}{V} \right| \cdot 100\%$$

“Computation method” Choose a method for determining the volume of the solids:

- *“Compute in CATIA”*: Calculate using the built-in CATIA method
- *“Compute by tessellation”*: Calculate the volume of tessellated entities in xCompare.

Result values

“Volume of reference entity”

“Volume of compare entity”

“Absolute difference of the volumes”

“Volume mean value”

“Deviation from the mean value”

9.3.7 Compare CGR to V5BRep

Availability

Compare V5 Part with V5 CGR

Description

This check compares tessellated representations (LODs) of solids and shells from the compare model with BReps of solids and shells from the reference model.

Points are distributed on the tessellated representation from the compare model and projected onto the BRep from the reference model.

Parameters

“Belonging tolerance for triangle points [mm]” Maximum distance between triangle vertices to form a possible pair of reference and compare points.

“Identical tolerance for triangle points [mm]” Maximum distance between a pair of triangle vertices to be considered identical.

“Arrangement of projection points on triangles” Choose what discretization points to create for every triangle: *“Vertices of triangle”*, *“Vertices and center of triangle”*, or *“Vertices, centers of edges, and center of triangle”*.

“Belonging tolerance for triangle inner points [mm]” Maximum distance between centers of edges and centers of triangles to form a possible pair of reference and compare points.

“Identical tolerance for triangle inner points [mm]” Maximum distance between centers of edges or centers of triangles to be considered identical.

“Ignore lines and points” Select this option to project only triangle points of compare triangulations. Deselect this option to project triangle points, line points, and unique points of compare triangulations.

Result values

numPointsToProjectOnRef Number of points on the reference entity to be projected onto the compare entity

numPointsTooMuchDist Maximum distance between any corresponding points on reference and compare entity

MaxDistance Number of points outside the identical tolerance

numMissingPointsOnCmp Number of points on the reference entity with no counterpart on the compare entity

9.3.8 Compare Tessellations to CGR

Availability

Compare V5 Part with V5 CGR

Description

This check compares tessellated representations of the compare model (LOD lines) to the tessellation (CGR) of the reference model. The reference model can also be a V5 Part, for which a tessellation is generated during the check run, using the specified tessellation parameters.

Points are distributed on the tessellated representation from the compare model and projected onto the tessellation from the reference model, and vice versa.

Parameters

“Tessellation sag for the reference entity” Sag parameter for generating a tessellation from the V5 reference model

“Tessellation step for the reference entity” Step parameter for generating a tessellation from the V5 reference model

“Belonging tolerance [mm]” Maximum distance between points to form a possible pair of reference and compare points.

“Identical tolerance [mm]” Maximum distance between a pair of reference and compare points to be considered identical.

“Arrangement of projection points on triangles” Choose what discretization points to create for every triangle: *“Vertices of triangle”*, *“Vertices and center of triangle”*, or *“Vertices, centers of edges, and center of triangle”*.

Result values

numPointsToProjectOnRef Number of points on the reference entity to be projected onto the compare entity

numPointsToProjectOnCompare Number of points projected onto the compare entity

numMissingPointsOnRef Number of points on the reference entity with no counterpart on the compare entity

numMissingPointsOnCmp Number of points on the reference entity with no counterpart on the compare entity

numPointsTooMuchDist Number of points outside the identical tolerance

MaxDistance Maximum distance between any corresponding points on reference and compare entity

9.3.9 Compare Transformation Matrices

Availability

Compare V5 Product with V5 Product

Description

This check compares the transformation matrices of reference and compare entities.

Parameters

“Transformation matrix” Choose the type of transformation matrices to compare, *“Relative”*, *“Resulting”* (absolute), or *“Relative and Resulting”* (both).

“Comparison tolerance [mm]” Tolerance for matrix elements within which transformation matrices are considered equal.

Result values

RefRelativeTrafoMatrix Relative transformation matrix for reference entity

RefRelativeTranslVector Relative translation vector for reference entity

CmpRelativeTrafoMatrix Relative transformation matrix for compare entity

CmpRelativeTranslVector Relative translation vector for compare entity

“Reference transformation matrix” Resulting transformation matrix for reference entity

“Reference transformation vector” Resulting translation vector for reference entity

“Compare transformation matrix” Resulting transformation matrix for compare entity

“Compare transformation vector” Resulting translation vector for compare entity

9.3.10 Compare Drawing Views' Generated Geometry

Availability

Compare V5 Drawing with V5 Drawing

Description

This check compares properties of views with generated geometry in the reference and compare document.

The following properties can be checked:

- Pointed document. This is the part or product to which the generated geometry is linked.
- Linked element. For parts, this is a *Geometrical Set* or *Solid Body*; for products, this is a part/product component
- Number of generated geometry elements
- Bounding box of generated geometry

Parameters

“Check pointed document” Select this option to check the pointed document. This is the part or product to which the generated geometry is linked.

“Check link to element” Select this option to check the linked element. This is a geometrical set or solid body to which the generated geometry is linked.

“Check number” Select this option to check the number of generated geometry elements.

“Check bounding box” Select this option to check the bounding box of generated geometry elements.

“Tolerance for bounding box check” Tolerance within which bounding boxes are considered equal.

Result values

RefGenerativeStatus Reference view is a generative view (“yes”) or not (“no”)

RefPointedDocument Full path of the pointed document for the reference view, or one of the following codes:

- NO_POINTED_DOCUMENT: No pointed document view available, as the reference view is no generative view
- POINTED_DOCUMENT_NOT_FOUND: The pointed document for the reference generative view has not been found.

RefLinkToElement Path of linked element for the reference view, or one of the following codes:

- NO_LINK_TO_FEATURE: No linked feature available, as the compare view is no generative view
- LINK_TO_FEATURE_NOT_FOUND: The linked feature has not been found.

RefNumber Number of generated geometry elements in the reference view

RefBoundingBox Bounding box of the reference view

CmpPointedDocument Full path of the pointed document for the compare view, or one of the following codes:

- NO_POINTED_DOCUMENT: No pointed document available, as the compare view is no generative view
- POINTED_DOCUMENT_NOT_FOUND: The pointed document for the compare generative view has not been found.

CmpLinkToElement Path of linked element for the compare view, or one of the following codes:

- NO_LINK_TO_FEATURE: No linked feature available, as the compare view is no generative view
- LINK_TO_FEATURE_NOT_FOUND: The linked feature has not been found.

CmpNumber Number of generated geometry elements in the compare view

CmpBoundingBox Bounding box of the compare view

9.3.11 Compare Points

Availability

Compare V5 Part with V5 Part

Description

This check compares the coordinates of corresponding points in the reference and compare model.

Parameters

“Comparison tolerance [mm]” Maximum allowed distance [mm] between corresponding coordinates of points.

9.3.12 Compare Sketches

Availability

Compare V5 Part with V5 Part

Description

This check compares sketches in the compare and reference model.

Parameters

“Check used constraints” Check sketch constraints regarding their name, internal name/path, type, active flag, value, and elements. Check elements referenced by constraints regarding their name, internal name/path, and type.

“Check plane definition” Check the definition of support planes regarding their name, internal name/path, and type.

“Check geometric subelements” Select this option to check geometric sub-elements regarding their name, internal name/path, and type. These properties are checked for the following types of elements:

2DPoint, 2DLine, 2DCircle, 2DSplineCurve, 2DEllipse, 2DParabola, 2DHyperbola, 2DOffsetCurve, 2DConnectCurve, 2DPolyline, 2DConicCurve, R6IntersectedGeometrySet, R7IntersectedGeometrySet, R6ProjectedGeometrySet, R7ProjectedGeometrySet, R6SilhouetteGeometrySet, R7SilhouetteGeometrySet, R6Imported3DGeometry, R7Imported3DGeometry

The following types of elements are also checked regarding their geometry data:

2DPoint, 2DLine, 2DCircle, 2DSplineCurve, 2DEllipse, 2DParabola, 2DHyperbola, 2DConnectCurve, 2DPolyline, 2DConicCurve

“Name to be checked” Choose which type of name attribute to check, “*Display name*” or “*Internal name*”.

9.3.13 Compare V5BReps to CGR

Availability

Compare V5 Part with V5 CGR

Description

This check compares BReps of solids and shells of the reference model with tessellated representations of solids and shells in the compare model.

Points distributed on the reference BRep entity are projected onto the tessellated representation in the compare model.

Parameters

“Belonging tolerance [mm]” Maximum distance between points to form a possible pair of reference and compare points,

“Identical tolerance [mm]” Maximum distance between a pair of reference and compare points to be considered identical.

“Distribution of points on faces” Choose a method for the distribution of discretization points on faces:

- *“Fixed number of points in U and V direction”*: Distribute a fixed number of points in U and V direction on each face.

The number of points is specified by parameter “Fixed number of points”.

- *“Fixed number of points per face”*: Distribute a fixed number of points uniformly distribution on each face.

The number of points is specified with parameter “Fixed number of points”.

- *“Points at a given distance”*: Distribute points at a given distance on each face.

Specify with parameter “Relation of point distance to face size” whether the distance is an absolute value or relative to the face size. Specify with parameter “Point distance” the absolute or relative point distance, respectively.

“Fixed number of points” Number of discretization points.

Depending on the setting of “Distribution of points on faces”, this parameter is either the fixed number of points in U and V direction, or the fixed number of points per face.

This parameter is not used with setting *“Points at a given distance”*.

“Relation of point distance to face size” This parameter applies only if “Distribution of points on faces” is set to *“Points at a given distance”*. Choose the relation of point distance to face size:

- *“Absolute”*: Create discretization points at a distance specified by parameter “Point distance”.

- “*Relative*”: Create discretization points at a distance relative to the face size. The distance is a percentage of the face diagonal specified by parameter “Point distance”.

“Point distance (absolute or relative [%])” Distance between discretization points. Set this parameter depending on the setting for “Relation of point distance to face size”:

- If the relation is “*Absolute*”, this parameter specifies the absolute distance between discretization points [mm].
- If the relation is “*Relative*”, this parameter specifies the diagonal as a percentage of the face diagonal.

Result values

numPointsToProjectOnRef Number of points on the reference entity to be projected onto the compare entity

numPointsTooMuchDist Number of points outside the identical tolerance

MaxDistance Maximum distance between any corresponding points on reference and compare entity

numMissingPointsOnCmp Number of points on the reference entity with no counterpart on the compare entity

9.4 Metadata

9.4.1 Compare Activation Status

Availability

Compare V5 Part with V5 Part
Compare V5 Product with V5 Product

Description

This check compares the activation status of matching entities in the reference and compare model.

Parameters

No parameters available.

Result values

RefActivStat Activation status of the reference entity

CmpActivStat Activation status of the compare entity

9.4.2 Compare Annotation Captures

Availability

Compare V5 Part with V5 Part
Compare V5 Product with V5 Product

Description

This check compares annotation captures in the reference and compare document.

Parameters

“Check clipping plane state” Check the “Clipping Plane” property.

“Check camera origin” Check the camera origin.

“Check camera direction” Check the camera direction.

“Check camera zenith” Check the camera zenith.

“Check hidden text” Check the “Hidden text” capture attribute.

“Check active view state” Check the “Active view” state.

“Check camera type” Check the camera type.

“Check camera name” Check the camera name.

“Check camera target” Check the camera target.

“Check camera angle” Check the camera angle.

“Check camera zoom” Check the camera zoom.

“Check active view” Check the active view.

“Check stored active view state” Check the stored active view state.

“Check current state” Check the “Current” capture attribute.

“Check 'Manage Visibility' state” Check the “Manage the visibility of part instances, bodies and geometrical sets” capture attribute.

“Check 'Display in 3D' state” Check the “Display in 3D” capture attribute.

Result values

hiddenTextRef Hidden text of reference entity

hiddenTextCmp Hidden text of compare entity

currentStateRef “Current” capture attribute of reference entity

currentStateCmp “Current” capture attribute of compare entity

clippingPlaneStateRef “Clipping plane” property of reference entity

clippingPlaneStateCmp “Clipping plane” property of compare entity

storedActiveViewStateRef “Stored active view” property of reference entity

storedActiveViewStateCmp “Stored active view” property of compare entity

3DStateRef “Display in 3D” property of reference entity

3DStateCmp “Display in 3D” property of compare entity

ActiveViewRef “Active view” property of reference entity

ActiveViewCmp “Active view” property of compare entity

CameraTypeRef “Camera type” property of reference entity

CameraTypeCmp “Camera type” property of compare entity

CameraNameRef “Camera name” property of reference entity

CameraNameCmp “Camera name” property of compare entity

9.4.3 Compare Annotation Datums

Availability

Compare V5 Part with V5 Part
Compare V5 Product with V5 Product
Compare V5 Drawing with V5 Drawing

Description

This check compares properties of annotation datum features and annotation datum targets in the reference and compare document.

For V5/V5 checks, both semantic and non-semantic annotations are checked.

Parameters

“Check linked geometry of annotation” Check the geometry to which the annotations are linked.

“Check view of annotation” Check the support view of the annotations.

“Check label” Check the label text.

“Check upper text (only for datum targets)” Check the upper text. This parameter applies only to datum targets.

“Check diameter symbol status (only for datum targets)” Check the diameter symbol status. This parameter applies only to datum targets.

“Check targets of datum” Check the targets of datum features. This parameter applies only to datum features.

“Check datum of semantic target” Check the datum feature of a target. This parameter applies only to semantic datum targets.

9.4.4 Compare Annotation Datums

Availability

Compare V5 Part with V5 Part
Compare V5 Product with V5 Product

Description

This check compares properties of annotation datum features and annotation datum targets in the reference and compare document.

For V5/V5, both semantic and non-semantic annotations are checked.

Parameters

“Check label” Check the label text.

“Check upper text (only for datum targets)” Check the upper text. This applies to annotation datum targets only.

“Check diameter symbol status (only for datum targets)” Check for the use of the diameter symbol. This applies to annotation datum targets only.

“Check targets of datum” Check the targets assigned to a datum feature.

“Check datum of semantic target” Check the datums assigned to a target.

“Check linked geometry of annotation” Check the linked geometry of annotations.

“Check view of annotation” Check the support view.

9.4.5 Compare Annotation Dimensions

Availability

Compare V5 Drawing with V5 Drawing
Compare V5 Part with V5 Part
Compare V5 Product with V5 Product

Description

This check compares properties of annotation dimensions in the reference and compare document.

To check main and dual values of annotations in V5/V5 documents, use check *Compare Dimension Properties*, page 97.

Parameters

“Tolerance for limit of size definition values” Maximum allowed tolerance between Limit of size values in reference and compare entities.

This parameter is not available for drawings.

“Check measured value” Check the measured value.

“Tolerance for measured value” Allowed tolerance between measured values in reference and compare entities.

“Check linked geometry of annotation” Check the linked geometry of annotations.

This parameter is not available for drawings.

“Check view of annotation” Check the support view of annotations.

This parameter is not available for drawings.

9.4.6 Compare Annotation Geometrical Tolerances

Availability

Compare V5 Part with V5 Part
Compare V5 Product with V5 Product

Description

This check compares geometrical tolerance annotations in the reference and compare document.

Parameters

“Check upper text” Check the upper text.

“Check lower text” Check the lower text.

“Check tolerance type” Check the tolerance type.

“Check tolerance value” Check the tolerance value.

“Check tolerance reference” Check the tolerance reference.

“Numerical display properties (only for semantic geometrical tolerance)” Check the numerical display properties of semantic annotations.

“Tolerance zone direction (only for semantic geometrical tolerance)” Check the tolerance zone direction of semantic annotations.

“Projected tolerance zone (only for semantic geometrical tolerance)” Check the projected tolerance zone of semantic annotations.

“Linked geometry of annotation” Check the geometry linked to the annotation.

“View of annotation” Check the support view of annotations.

9.4.7 Compare Annotation Graphic Primitive

Availability

Compare V5 Part with V5 Part
Compare V5 Product with V5 Product

Description

This check compares graphic primitives (tessellated representations) of matching annotations in the reference and compare document.

Parameters

“Tolerance [mm]” Allowed tolerance between corresponding points in reference and compare entities.

“Ignore annotations which are parallel to the screen” Do not check annotations for which the “Parallel to screen” option is selected.

9.4.8 Compare Annotation Notes

Availability

Compare V5 Drawing with V5 Drawing
Compare V5 Part with V5 Part
Compare V5 Product with V5 Product

Description

This check compares annotation notes in the reference and compare document.

Parameters

“Check texts” Check annotations of the *text* type.

This parameter is not available for drawings.

“Check flag notes” Check annotations of the *flag note* type.

This parameter is not available for drawings.

“Check NOAs” Check annotations of the *NOA* (note object attribute) type.

This parameter is not available for drawings.

“Check type of Note Object Attribute” Check the type of NOA.

This parameter is not available for drawings.

“Check text content” Check the text content of annotations.

“Check hidden text” Check the hidden text property.

This parameter is not available for drawings.

“Check graphical representation of Note Object Attribute” Check the graphical representation of note object attributes.

“Check links to file or URL” Check the link to file or URL property.

“Check linked geometry of annotation” Check the geometry linked to the annotation.

“Check view of annotation” Check the support view of the annotation.

Result values

“Text content of reference entity” Text content of the reference entity

“Text content of compare entity” Text content of the compare entity

“Hidden text of reference entity” “Hidden text” property of the reference entity

“Hidden text of compare entity” “Hidden text” property of the compare entity

“Links to file or URL of reference entity” Link to file or URL property of the reference entity

“Links to file or URL of compare entity” Link to file or URL property of the reference entity

“Type of Note Object Attribute of reference entity” Type of NOA of the reference entity

“Type of Note Object Attribute of compare entity” Type of NOA of the compare entity

“Graphical representation of Note Object Attribute of reference entity” Graphical representation of the reference entity

“Graphical representation of Note Object Attribute of compare entity” Graphical representation of the compare entity

9.4.9 Compare Annotation Roughness

Availability

Compare V5 Part with V5 Part
Compare V5 Product with V5 Product
Compare V5 Drawing with V5 Drawing

Description

This check compares roughness annotations in the reference and compare document.

Parameters

This check uses no parameters when comparing V5 Drawings.

“Check fields” Check all fields.

“Check applicability” Check roughness applicability.

“Check obtention mode” Check obtention mode

“Check inverted status” Check the invert status.

“Check linked geometry of annotation” Check the geometry linked to annotations.

“Check view of annotation” Check the support view of annotations.

9.4.10 Compare Color Properties

Availability

Compare V5 Drawing with V5 Drawing
Compare V5 Part with V5 Part
Compare V5 Product with V5 Product

Description

This check compares color and transparency of matching entities in the reference and compare document.

There is no transparency property in V5 drawings.

For V5 Parts, BRep colors can be compared. When checking the color of single BRep elements, color properties are considered equal if the number of BRep elements in a particular color is the same in the reference and compare entity. As an exception, a different number of BRep elements is allowed for the color which is most frequently used in the reference entity. This allows for an evaluation of BRep color properties while ignoring certain geometrical differences. It is assumed that a different number of BRep elements is most likely to occur for those elements with the most frequently used color. To take into account the geometry of BRep elements, select the “Perform Geometrical BRep Comparison” option.

Parameters

“Check color” Check the element color.

“Check transparency” Check the transparency of elements if the respective color check is selected.

This parameter is not available for drawings.

“Check BRep color” Check the color of single BRep elements. This parameter is only available for V5 Parts.

“Check BRep centers” If this option is selected, BRep elements with identical colors are checked if they are geometrically different.

Depending on the complexity of a model, checks may take considerably longer when this option is selected.

This parameter is only available for V5 Parts.

Result values

“Reference color (Red)”, “Reference color (Green)”, “Reference color (Blue)” RGB color components (0...255) for the reference entity

“Reference transparency value” Transparency value (0...255) for the reference entity

“Compare color (Red)”, “Compare color (Green)”, “Compare color (Blue)” RGB color components (0...255) for the compare entity

“Compare transparency value” Transparency value (0...255) for the compare entity

9.4.11 Compare Current Work Objects

Availability

Compare V5 Part with V5 Part

Description

This check compares the *In Work Object* in the compare and reference model with regard to display name, internal name, entity type, and CAA type

Parameters

“Name to be checked” Choose the name attribute to be checked, “*Display name*” or “*Internal name*”.

9.4.12 Compare Dimension Properties

Availability

Compare V5 Drawing with V5 Drawing
Compare V5 Part with V5 Part
Compare V5 Product with V5 Product

Description

This check compares the properties of matching FT/A dimension entities in the reference and compare document.

Parameters

“Check value properties” Check the properties defined in the “Properties” dialog, “Value” tab.

“Check tolerance properties” Check the properties defined in the “Properties” dialog, “Tolerance” tab.

“Check dimension line properties” Check the properties defined in the “Properties” dialog, “Dimension Line” tab.

“Check extension line properties” Check the properties defined in the “Properties” dialog, “Extension Line” tab.

“Check value properties” Check the properties defined in the “Properties” dialog, “Value” tab.

“Check dimension texts properties” Check the properties defined in the “Properties” dialog, “Dimension Texts” tab.

9.4.13 Compare Drawing Dittos

Availability

Compare V5 Drawing with V5 Drawing

Description

Dittos are drawing elements that are referenced from another view. The reference element for an **internal ditto** is a detail view in the same drawing. The reference element for an **external ditto** is a detail view in a different drawing or catalog.

For internal dittos, this check compares the internal paths with display names in the reference and compare document.

For external dittos, this checks compares the path to the referenced external document or catalog.

Parameters

“Check internal dittos” Select this option to check internal dittos.

“Check external dittos” Select this option to check external dittos.

Result values

RefInternalDittoLink Path to the detail view referenced by the internal ditto in the reference drawing

RefExternalDittoLink Path to the catalog referenced by the external ditto in the reference drawing

CmpInternalDittoLink Path to the detail view linked by the internal ditto in the compare drawing

CmpExternalDittoLink Path to the catalog linked by the external ditto in the compare drawing

9.4.14 Compare Drawing Sheets

Availability

Compare V5 Drawing with V5 Drawing

Description

This check compares properties of drawing sheets in the reference and compare document.

Parameters

“Check scale” Check the sheet scale.

“Check format” Check the sheet format.

“Check format frame display” Check the sheet frame visibility.

“Check orientation” Check the sheet orientation.

“Check projection method” Check the projection method.

“Check generative views positioning mode” Check the positioning mode of generative views.

“Check print area” Check the printable area.

9.4.15 Compare Drawing Views' Properties

Availability

Compare V5 Drawing with V5 Drawing

Description

This check compares properties of views in the reference and compare document.

Parameters

“Check frame visibility” Check the sheet frame visibility.

“Check locked status” Check the view lock status.

“Check visual clipping” Check visual clipping.

“Check angle” Check the view angle.

“Check scale” Check the view scale.

“Check dress-up (only for generative views)” Check the dress-up of generative views.
This parameter only applies to generative views.

“Check name (prefix, ID, suffix, formula)” Check the prefix, ID, suffix, and formula from which the view names are composed. This parameter only applies to generative views.

“Check value of 'Only generate parts larger than' (only for generative views)” Check the numeric value of the “Only generate parts larger than” property of generative views.

“Check status of 'Enable Occlusion Culling' (only for generative views)” Check the “Enable occlusion culling” property of generative views.

“Check generation mode (only for generative views)” Check the generation mode of generative views.

9.4.16 Compare Feature Input

Availability

Compare V5 Drawing with V5 Drawing
Compare V5 Part with V5 Part
Compare V5 Product with V5 Product

Description

This check compares the input attributes of the reference and compare feature.

V5 features are based on *input attributes* that determine the resulting geometry.

The following input attributes are ignored: *FromExternalSpecification*, *Activity*, *NewActivity*, *fixed*, *rigid*, *bloc_children*, *MMAlias*, *NDVizP*, *HideOnOff*, *FeatureKeep*, *SymRel*, *ResultIN*

Parameters

“Name to be checked” Choose the name attribute to be checked, “*Display name*” or “*Internal name*”.

9.4.17 Compare Font Properties

Availability

Compare V5 Drawing with V5 Drawing

Compare V5 Part with V5 Part

Compare V5 Product with V5 Product

Description

This check compares font properties of annotation text, flag note and NOA (note object attribute) elements in the reference and compare document in the reference and compare document. The following font properties can be checked: font name, font style, font size, underline, text color, attributes, character properties.

Parameters

“Check font name” Check the font name.

“Check font style” Check the font style.

“Check font size” Check the font size.

“Check font underline” Check the text underline attribute.

“Check font color” Check the text color attribute.

“Check font attributes” Check font attributes (strikethrough, overline, superscript, subscript).

“Check character properties” Check character properties (character ratio, slant, spacing, and pitch).

9.4.18 Compare Layer Properties

Availability

Compare V5 Drawing with V5 Drawing
Compare V5 Part with V5 Part
Compare V5 Product with V5 Product

Description

This check compares the layer number of matching entities in the compare and reference model.

Parameters

No parameters available.

Result values

“Layer number in reference” Layer number of reference entity

“Layer number in compare” Layer number of compare entity

9.4.19 Compare Model by Image

Availability

Compare V5 Part with V5 Part
Compare V5 Product with V5 Product
Compare V5 Drawing with V5 Drawing

Description

This check compares pixel images of defined views of the reference and compare model. Only visible elements are captured.

In Parts and Products, the following defined views are compared: Isometric, Top, Bottom, Right, Left, Front, and Back.

Parameters

“Check view mode” Choose the view mode in which the images to be compared are captured: *“Shading with edges”* or *“Wireframe (NHR)”*.

This parameter is only available for Parts or Products.

“Check color” Compares the RGB color of pixels. When using *“Shading with edges”* view mode, this option is always selected.

“Resolution for image creation [pixels/inch]” Resolution of the images to be captured in pixels per inch (ppi). The maximum resolution is 400 ppi.

“Width of image [mm]” Width of the captured image in millimeters. The maximum width is 1000 mm.

“Height of image [mm]” Height of the captured image in millimeters. The maximum height is 1000 mm.

Results

The captured images of reference and compare model are stored in the report directory.

To view differences between the captured images in the analysis window, activate the “Mark differences in geometry area” option and select an item in the pairs list.

The overlay image shown in the analysis window is always a wireframe image, irrespective of the view mode in which the reference and compare image have been captured.

↗ *Fine analysis for the Compare Model by Image check, page 37*

9.4.20 Compare Parameters

Availability

Compare V5 Drawing with V5 Drawing

Compare V5 Part with V5 Part

Compare V5 Product with V5 Product

Description

This check compares matching parameters in the compare and reference model with regard to their type, value, and the existence of a formula link.

Parameters

“Check parameter value” Check the parameter value.

“Check parameter type” Check the parameter type.

“Check parameter formula” Check the existence of a formula linked to the parameter.

“Check parameter hidden state” Check the “Hidden” attribute of the parameter.

Result values

“Type of reference entity” Parameter type of reference entity

“Value of reference entity” Parameter value of reference entity

“Formula of reference entity” At least one formula does link to the parameter (“yes”), or no formula link (“no”) in the reference entity.

“Type of compare entity” Parameter type of compare entity

“Value of compare entity” Parameter value of compare entity

“Formula of compare entity” At least one formula does link to the parameter (“yes”), or no formula link (“no”) in the compare entity.

9.4.21 Compare Pick Properties

Availability

Compare V5 Drawing with V5 Drawing
Compare V5 Part with V5 Part
Compare V5 Product with V5 Product

Description

This check compares the setting of the *Pick* property of matching entities in the reference and compare model.

Parameters

No parameters available.

Result values

RefPickable Pick property of the reference entity (0 = not pickable, 1 = pickable)

CmpPickable Pick property of the compare entity (0 = not pickable, 1 = pickable)

9.4.22 Compare Point/Line Types

Availability

Compare V5 Drawing with V5 Drawing
Compare V5 Part with V5 Part
Compare V5 Product with V5 Product

Description

This check compares the point type, line type and line thickness of matching entities in the reference and compare model.

Matching entities that have no point type, line type and thickness properties are considered equal.

Parameters

“Check point/line type” Check the point type and line type.

“Check thickness” Check the thickness attribute.

Result values

RefPointLineType Point/Line type of the reference entity

CmpPointLineType Point/Line type of the compare entity

RefThickness Point/Line thickness of the reference entity

CmpThickness Point/Line thickness of the compare entity

9.4.23 Compare Product Properties of Root

Availability

Compare V5 Part with V5 Part
Compare V5 Product with V5 Product

Description

This check compares standard properties and user-defined properties of the root feature in the compare and reference model regarding their existence, name, type, and value.

Parameters

No parameters available.

9.4.24 Compare Publications

Availability

Compare V5 Part with V5 Part
Compare V5 Product with V5 Product

Description

This check compares publications in the reference and compare document. When comparing V5 Parts, the check also compares the associated objects of publications.

Parameters

“Name to be checked” Choose the name attribute to be checked, *“Display name”* or *“Internal name”*.

“Check BRep centers” Checks whether published BRep elements with identical publication names and matching associated objects are geometrically different.

Depending on model complexity, checks may take considerably longer with this option selected.

Result values

numEqualElem Number of equal publications

numDifferentElem Number of different publications

numMissingElemOnRef Number of missing publications in reference document

numMissingElemOnCmp Number of missing publications in compare document

9.4.25 Compare Show Properties

Availability

Compare V5 Drawing with V5 Drawing
Compare V5 Part with V5 Part
Compare V5 Product with V5 Product

Description

This check compares the visibility (Show/Hide status) of matching entities in the reference and compare models.

Parameters

No parameters available.

Result values

RefShow Visibility of the reference entity (0 = NoShow, 1 = Show)

CmpShow Visibility of the compare entity (0 = NoShow, 1 = Show)

9.4.26 Compare Text Properties

Availability

Compare V5 Drawing with V5 Drawing
Compare V5 Part with V5 Part
Compare V5 Product with V5 Product

Description

This check compares text properties of annotation text, flag note and NOA (note object attribute) elements in the reference and compare document.

Parameters

“Check text frame properties” Checks text frame properties (frame, color, thickness, line type).

“Check text position” Checks text position properties (anchor point, anchor mode, line spacing value, line spacing mode, coordinates, justification, wrapping length).

“Check text orientation” Checks text orientation properties (reference, orientation, angle, mirroring).

“Check text options” Checks text options properties (units, scale, back field, superscript offset and height, subscript offset and height, display, background).

9.4.27 Compare Time Stamps

Availability

Compare V5 Drawing with V5 Drawing
Compare V5 Part with V5 Part
Compare V5 Product with V5 Product

Description

This check compares the timestamps of matching entities in the reference and compare model.

Parameters

No parameters available.

Result values

RefTimeStamp Timestamp of the reference entity

CmpTimeStamp Timestamp of the compare entity

9.5 Electrical

9.5.1 Compare Electric Bundle Segments

Availability

Compare V5 Product with V5 Product

Description

This check compares bundle segments in the reference and compare document.

Parameters

“Check connection points” Compares the total number of connection points per bundle segment, the names and the coordinates of corresponding connection points.

“Check segment length” Compares the length of bundle segments.

“Check supports” Compares the number of linked supports of bundle segments.

“Check protections” Compares the number of linked protections of bundle segments.

Result values

RefNumCp Number of connection points in reference entity

CmpNumCp Number of connection points in compare entity

RefNumFirstConn Number of reference first connections

CmpNumFirstConn Number of compare first connections

RefNumSecConn Number of reference second connections

CmpNumSecConn Number of compare second connections

RefBSLength Length of reference bundle segment

CmpBSLength Length of compare bundle segment

RefNumSupports Number of supports in reference entity

CmpNumSupports Number of supports in compare entity

RefNumProtections Number of protections in reference entity

CmpNumProtections Number of protections in compare entity

10 Mapping

10.1 Introduction

Mapping

Mapping identifies pairs of correlating entities. These pairs of entities constitute the data basis that will be checked.

The process of mapping is an automated sequence comprising the following steps:

- Retrieve the allowed element types for the checks
- Filter elements according to custom selection rules
- Build pairs according to custom pairing rules

When mapping has finished, the resulting pairs of entities will be checked for differences, which is the second major stage when comparing models.

Mapping Rules

Mapping rules control the selection, pairing and aggregation of elements. They apply to individual checks.

Every check relies on mapping rules, some of which are active by default. You can activate and deactivate mapping rules, where necessary. For example, you can deactivate the “Pairing by name” mapping rule to build pairs of corresponding elements with different names.

Some mapping rules can be customized with parameters.



TIP

- If you activate additional mapping rules, mapping is more specific, which will narrow down the number of entities to be compared.
- If you deselect or disable mapping rules, mapping is less specific, therefore more pairs of entities can be formed. If no mapping rules are selected at all, all possible pairs of compare and reference entities are compared with each other.

Pairing methods

xCompare offers two pairing methods, *matching* and *smart pairing*.

Matching forms a pair if two elements fulfill all activated matching rules.

Smart pairing forms a pair based on the activated smart pairing rules. The rules are applied following this procedure, starting with rule with the highest priority:

- If a pairing rule returns a unique result, no further rules are applied.
- Otherwise, if the pairing rule returns an ambiguous or no result, the pairing rule with the next lower priority is evaluated.

- If no unique result after applying all pairing rules, the first pair of corresponding entities is used.

When smart pairing is active, matching and aggregation are deactivated.

Matching is recommended when it is likely that certain properties of corresponding elements are unchanged.

Smart pairing is recommended when it a certain property of corresponding elements is more likely to be equal than other properties.

Special case: CATDrawings

- In CATDrawings, views in different sheets may have identical internal names. Likewise, drawing elements in different views may have identical internal names. Pairing by path generally leads to more concise results than pairing by name and requires less processing time. Therefore the Pair by Path mapping rule is enabled by default for drawing checks. You can disable this rule, if required.
- It is not usually necessary to compare sheets or views of different types (e.g. sheets and detail sheets, views and detail views). Therefore the Pair by Type mapping rule is enabled by default for drawing checks. You can disable this rule, if required.

10.2 Reference to Mapping Rules

10.2.1 Entity Selection Rules

10.2.1.1 Filtering by Part Number/Name

Description

Use this rule to exclude elements if their names match the specified naming pattern.

In CATProducts, this rule uses the part numbers of components. In other models, the filter uses element names.

Parameters

Exclude these names Specify a Regular Expression for the names of elements to be excluded. All matching elements are excluded from the check. Several Regular Expressions can be separated by semicolon (;).

Example Exclude all elements whose names begin with “Z” or contain “ABC”:

`^Z.*; ABC`

10.2.1.2 Filtering by Parent Name

Description

This rule excludes elements whose parent element name matches the specified naming pattern.

Parameters

Exclude entities with these parent names Specify a Regular Expression for the names of elements whose child elements are to be excluded. All child elements of the matching elements are excluded from the check. Several Regular Expressions can be separated by semicolon (;).

Example Exclude all child elements of elements whose names begin with “Z” or contain “ABC”:

`^Z.*; ABC`

10.2.1.3 Filtering by Type

Description

Use this rule to exclude elements by native element type. You can specify separate element types for reference and compare entities.

The native element type for CATIA V5 elements is the CAA element type.

Parameters

Exclude reference entities of these native types Specify the types of elements to be excluded. Multiple type names can be separated by semicolon (;).

Example Exclude all elements in the reference document whose type is “GSMPlane” or “PRTSketch”:

GSMPlane; PRTSketch

Exclude compare entities of these native types Specify the types of elements to be excluded. Multiple type names can be separated by semicolon (;).

Example Exclude all elements in the compare document whose type is “GSMPlane” or “PRTSketch”:

GSMPlane; PRTSketch

10.2.1.4 Select by Part Number/Name

Description

Elements are selected only if their names match the specified naming pattern.

In CATProducts, this rule uses the part numbers of components. In other models, the filter uses element names. If an element has no name, the parent name is used.

Parameters

Select entities with these names Specify Regular Expressions for the names of elements to be compared. Multiple names can be separated by semicolon (;).

Example Select all elements whose name begins with “P” or contains a number:

^P.*; [0-9]+

10.2.1.5 Select by Parent Name

Description

Elements are selected only if their respective parent features match the specified naming rule.

Features without a parent feature are not selected.

Parameters

Select entities with these names Specify Regular Expressions for the names of elements to be compared. Multiple names can be separated by semicolon (;).

Example Select all elements whose name begins with “P” or contains a number:

^P.*; [0-9]+

10.2.1.6 Select by Type

Description

Elements are selected only if they are of a specified type.
This does not override the allowed types for the check.

Parameters

Select entities with these types Specify the names of the entity types. Multiple values can be separated by semicolon (;). The following entity types can be used:

- ET_UNKNOWN: All types
- ET_3D_BODY: Solids
- ET_3D_SHELL: Shells

10.2.1.7 Select by Layer

Description

Elements are selected only if they are on the same layer.
Features that are not on any layer are not selected.

Parameters

Select entities on layer Specify the layer number. Multiple values can be separated by semicolon.

10.2.1.8 Select Leaf Feature

Description

Elements are selected only if they are leaf features, i.e. elements without child elements.

Parameters

No parameters available.

10.2.1.9 Select Parent Feature

Description

Elements are selected only if they are parent features, i.e. have child elements.

Parameters

No parameters available.

10.2.1.10 Selection of Visible

Description

Elements are selected only if they are visible. This implies that all parent elements must be visible, too, as visibility is inherited.

This rule is ignored if the CAD system does not provide this property.



NOTE: Do not combine this rule with *Select of NonVisible*, page 119

Parameters

No parameters available.

10.2.1.11 Select of NonVisible

Description

Elements are selected only if they are invisible. This implies that the element itself or at least one of its superordinate elements (ancestors) must be invisible, as visibility is inherited.

This rule is ignored if the CAD system does not provide this property.



NOTE: Do not combine this rule with *Selection of Visible*, page 119

Parameters

No parameters available.

10.2.1.12 Select by Parent Type

Description

Elements are selected only if their respective parent element has the specified type.

Parameters

Select entities with these parent types Specify the names of the parent entity types.

Multiple values can be separated by semicolon (;). The following entity types can be used:

- ET_UNKNOWN: All types
- ET_3D_BODY: Solids
- ET_3D_SHELL: Shells

10.2.1.13 Select by Custom View

Description

Elements are selected only if they are included in the same custom view.
Features that are not included in any view are not selected.

Parameters

Use active layer filter and/or Active View of view Use only the active custom view or layer filter. All other custom views and layer filters are ignored.

Select entities in these custom views (separated by ;) Specify the names of custom views to be used. Multiple values are separated by semicolon. This parameter is ignored if parameter “Use active layer filter and/or Active View of view” is selected.

10.2.1.14 Select by Drawing Sheet

Description

Drawing elements are selected only if they are included in the same drawing sheet.

Parameters

SelectActiveSheet To select only active sheets, set this parameter to 1. To select sheets according to the other parameters, set this parameter to 0.

SelectDetailSheet To select detail sheets, set the parameter to 1. To exclude detail sheets, set this parameter to 0.

This parameter is ignored if SelectActiveSheet is set to 1.

SelectNonDetailSheet To select non-detail sheets, set the parameter to 1. To exclude non-detail sheets, set this parameter to 0.

This parameter is ignored if SelectActiveSheet is set to 1.

10.2.1.15 Select by Drawing View

Description

Drawing elements are selected only if they are included in the same drawing view.

Parameters

SelectActiveView To select only active views, set the parameter to 1. To select views according to the other parameters, set this parameter to 0.

SelectBackgroundView To select background views, set the parameter to 1. To select no background views, set this parameter to 0.

This parameter is ignored if **SelectActiveView** is set to 1.

SelectWorkingView To select working views, set the parameter to 1. To select no working views, set this parameter to 0.

This parameter is ignored if **SelectActiveView** is set to 1.

10.2.2 Pairing Rules

10.2.2.1 Pair by Name

Description

Elements are paired only if their names (display names) are equal.

Parameters

Common name pattern Regular Expression which both the reference and compare entity must match. Multiple Regular Expressions can be separated by semicolon (;).

You can use the placeholders `REFERENCENAME` and `COMPARENAME` for the names of the names of reference and compare entity, respectively,

When the parameter value is an empty string, the names must be identical.

Example The following Regular Expression pairs elements if the compare entity name begins with the reference entity name, followed by an arbitrary suffix.

```
^REFERENCENAME.*
```

Common names based on indexes Character positions (indexes) at which the reference and compare entity name must match.

Notation	Description
n	Single character at position n.
n-m	Subsequent characters from position n to position m.
n-*	Subsequent characters from position n to the end of the string
m-n;o-p	List of indexes separated by semicolon

Example The following value means that names must be identical at character positions 1, 4 to 6, and from 9 to the end:

```
1-2;4-6;9-*
```

```
1 4 9
: : :
APW52456AP085TCPLM
APX52457AP085TCPLM
```

10.2.2.2 Pair by Type

Description

Elements are paired only if their element types are equal.

Parameters

No parameters available.

10.2.2.3 Pair by Path

Description

Elements are paired only if they have the same paths in the respective document structure. Paths are specified from root to element.

Parameters

Common names based on indexes Character positions (indexes) at which the reference and compare entity paths must match.

Notation	Description
n	Single character at position n.
n-m	Subsequent characters from position n to position m.
n-*	Subsequent characters from position n to the end of the string
m-n;o-p	List of indexes separated by semicolon

Example The following value means that names must be identical at character positions 1 and 2, 4 to 6, and from 9 to the end:

1-2;4-6;9-*

1	4	9
:	:	:
APW52456	AP085TCPLM	
APX52457	AP085TCPLM	

10.2.2.4 Pair by Internal Name

Description

Elements are paired only if their internal names are equal.

Parameters

No parameters available.

10.2.2.5 Pair by Parent Name

Description

Elements are selected only if their parent have equal names (display names).

Parameters

No parameters available.

10.2.2.6 Pair by Layer

Description

Elements are paired only if they are on the same layer.

Parameters

No parameters available.

10.2.2.7 Pair by Custom View

Description

Elements are paired only if they are in the same custom view.

Parameters

No parameters available.

10.2.2.8 Pair by Position

Description

Elements are paired only if their absolute positions are equal.

This rule considers the absolute transformation matrices and translation vectors of entities.

Parameters

No parameters available.

10.2.2.9 Pair by Bounding Elements

Description

Elements are paired only if their bounding elements (bounding boxes, bounding spheres, or coordinates) are equal within a tolerance. The tolerance is controlled internally.

Parameters

No parameters available.

10.2.3 Aggregation Rules



NOTE: Aggregation is currently not supported for V5/V5 checks.

10.2.4 Override Rules

10.2.4.1 Override Entity Selection Rules

Description

This rule disables all entity selection rules, including the internal default selection rules. No element filters apply. All elements are forwarded to entity matching.

Parameters

No parameters available.

10.2.4.2 Override Entity Matching Rules

Description

This rule disables all entity matching rules, including the internal default matching rules. All pairs of entities are considered.

Parameters

No parameters available.

10.2.4.3 Override Aggregation Rules

Description

This rule disables all aggregation rules, including the internal default aggregation rules. No elements are aggregated.

Parameters

No parameters available.

11 Keyboard shortcuts

You can use the following shortcuts in the respective xCompare windows.

Main window shortcuts

Shortcut	Description
[Alt]+[R]	Open a reference document from disk. See “ <i>Reference document</i> ”, page 22
[Alt]+[C]	Open a compare document from disk. See “ <i>Compare document</i> ”, page 22
[Alt]+[P]	“ <i>Edit configurations</i> ”, page 22
[Alt]+[E]	“ <i>Open external report</i> ”, page 23
[Alt]+[O]	“ <i>Open the selected report</i> ”, page 23
[Alt]+[I]	“ <i>Show info</i> ”, page 22
[Ctrl]+[F3]	“ <i>Show help</i> ”, page 22 – currently not available
[Esc]	Close this window

Analysis window shortcuts

Shortcut	Description
[C]	“ <i>Center graph on selected pair</i> ”, page 43
[Z]	“ <i>Zoom on selected pair</i> ”, page 43
[A]	“ <i>Show fine analysis markings for selected pair</i> ”, page 44
[P]	“ <i>Create permanent marking elements</i> ”, page 44
[T]	“ <i>Transparency</i> ”, page 44
[O]	“ <i>Show report for product component</i> ”, page 44
[E]	“ <i>Enhanced visualization</i> ”, page 44
[S]	“ <i>Show image</i> ”, page 44
[Ctrl]+[F3]	“ <i>Help</i> ”, page 45 – currently not available
[Esc]	Close this window

Configuration editor shortcuts

Shortcut	Description
[Space]	<i>“Enable/Disable selected check”</i> , page 58
[C]	<i>“Duplicate selected check”</i> , page 58
[F2]	<i>“Rename selected check”</i> , page 58
[Ctrl]+[D]	<i>“Remove selected check”</i> , page 58
[F5]	<i>“Update check templates”</i> , page 59
[Esc]	Close this window

12 Manually editing the configuration file

12.1 General notes

xCompare configuration files are XML files. It is possible to edit these files in a text editor.

We recommend editing configurations using the configuration editor with graphical user interface where possible. Some settings, including mapping rule parameters, are not visible in the configuration editor and must be edited directly in the configuration file.



NOTE: Be careful when editing a configuration file manually. Unsuitable modifications may cause the configuration to stop working.

You should be familiar with XML syntax rules before editing a configuration.

To edit a configuration manually, we recommend starting with the copy of an existing configuration file, or creating a new configuration.

Existing configurations are located in the configurations directory of the xCompare installation. The path is defined by the TCACMPConfigPath environment variable.

↗ Create a new configuration using the configuration editor: 8.2.1 *Create a configuration*, page 56

↗ Create a new configuration using the command-line interface: 8.6 *Generating a configuration file in batch mode*, page 61

12.2 Linking concept

A configurations uses internal links to define settings in one place and reuse them elsewhere in the configuration once or several times. Internal links consist of a unique identifier for the source element and a link from the target element to the source element, both being XML attribute nodes.

Fig. 1 visualizes the links between check instances, check references, mapping rules, and the checks and rules available in the xCompare application.

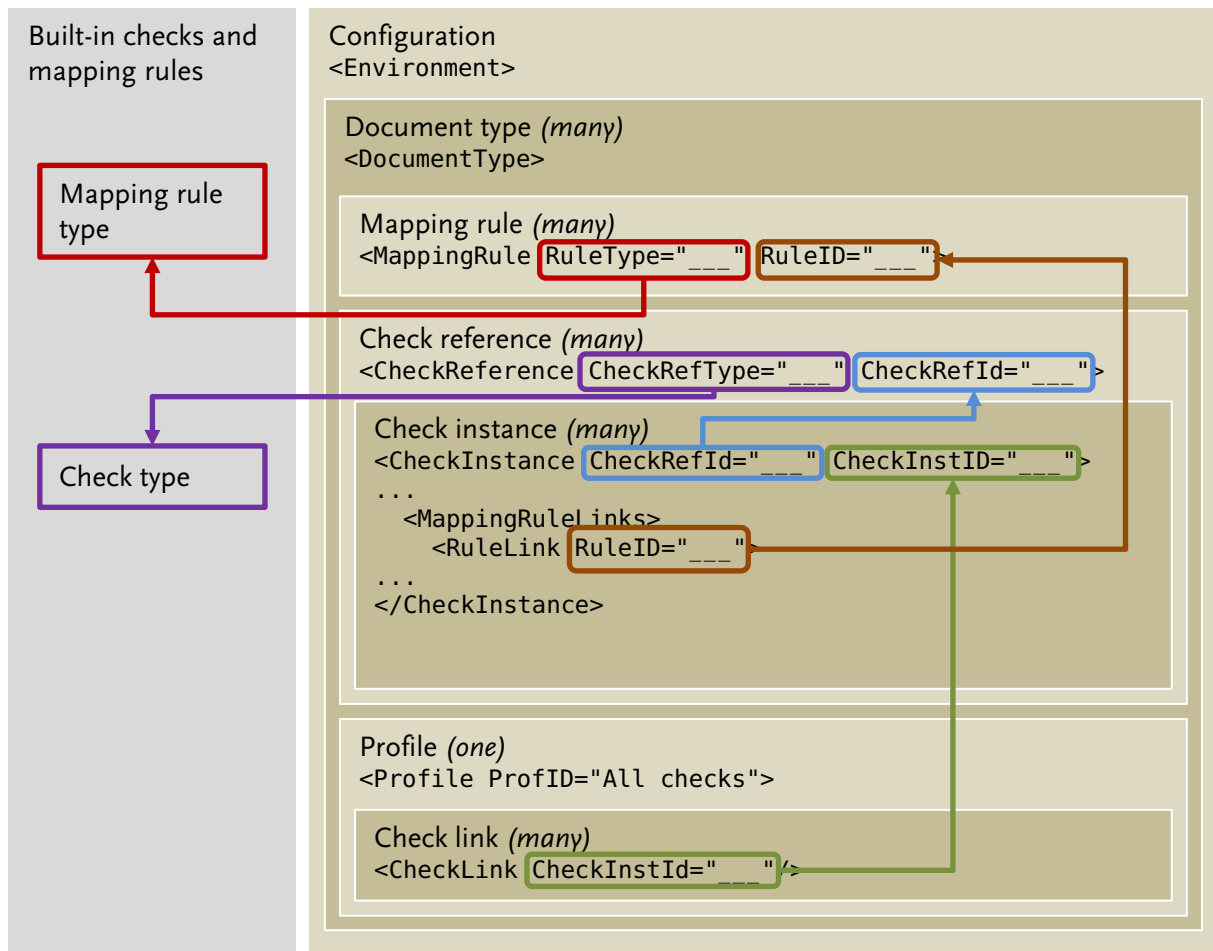


Fig. 1: Links between the profile, check instances, check references, and mapping rules. “Many” means there can be more than one element of this kind; “one” means there is only one.

12.3 Structure of configuration files

12.3.1 <Environment> node

XPath: /Environment

This is the root node of a configuration.

12.3.2 <DocumentType> nodes

XPath: /Environment/DocumentType

This node contains the profile, mapping rules, and checks for a certain pair of document types. The pair of document types is given by the DocumentCombination attribute with the following values:

- V5|V5Part = Compare two V5 Parts
- V5|V5Products = Compare two V5 Products
- V5|V5_CGR = Compare two V5 CGR

- V5_Part|V5_CGR = Compare V5 Part with V5 CGR
- V5|V5_Drawing = Compare two V5 Drawings

12.3.3 <Application> node

XPath: /Environment/Application

This node contains application settings.

Currently, the node contains the GUI language settings. If you require localized text in configurations, please contact Transcat PLM support for further information.

12.3.4 <MappingRules> node

XPath: /Environment/MappingRules

This node contains the mapping rules available in the configuration. Mapping rules are grouped by rule type (aggregation, pairing, selection, smart mapping, other).

12.3.5 <MappingRule> nodes

XPath: /Environment/MappingRules/*/MappingRule

These nodes define the availability and names of mapping rules.

The RuleType attribute specifies the type of the mapping rule. Do not change this value.

The RuleID attribute contains a unique identifier by which the mapping rule can be referenced from a check instance.

Possible modifications:

➤ *Rename a mapping rule*, page 134

➤ *Configure mapping rule parameters*, page 138

➤ Duplicate a mapping rule to specify the same type of rule with different parameters.
See *Duplicate a mapping rule*, page 135.

12.3.6 <Checks> node

XPath: /Environment/Checks

This node contains the check definitions. For details, see chapters <CheckReference> nodes, page 131 and <CheckInstance> nodes, page 132.

12.3.7 <CheckReference> nodes

XPath: /Environment/Checks/CheckReference

These nodes define the checks available in the configuration. A check reference can be linked from any number of check instances within the configuration.

The CheckRefId attribute contains a unique identifier by which the check can be referenced.

The CheckRefType attribute specifies the type of the check. Do not change this value.

Mapping rule links in the CheckReference node are not evaluated.

12.3.8 <CheckInstance> nodes

XPath: /Environment/Checks/CheckReference/CheckInstance

These nodes define the name, parameter values, and mapping rules for a check.

The CheckInstId attribute contains a unique identifier by which the check instance can be referenced.

The CheckRefId attribute points to a CheckReference node.

Possible modifications:

- *Rename a check instance*, page 136
- *Duplicate a check instance*, page 137
- *Choose the mapping rules of a check*, page 136
- *Edit check parameters*, page 141

12.3.9 <Profiles> node

XPath: /Environment/Profiles/

This node contains the profile.

The DefaultProfID attribute specifies the unique identifier of default profile. The default profile is used in batch runs when no other profile has been selected.



NOTE: Since xCompare 1.9.1, configurations contain only one profile. If a previously created configuration contains more than one profile, it needs to be converted. To learn more, please contact the Transcat support hotline.

- *Contacting Transcat PLM*, page 9

12.3.10 <Profile> nodes

XPath: /Environment/Profiles/Profile

This node defines a profile.

The ProfID attribute is the unique identifier and also the display name for the profile.

12.3.11 <Section> nodes

XPath: /Environment/Profiles/Section/Profile/Section

This node defines a set of checks. Profiles contain one or more sets of checks, one of which is selected automatically for the check run, depending on certain properties of the reference document.

If the profile contains only one set of checks (that is, one Section node), this set will be used.

The `ModelTypeID` attribute is a unique identifier for the set of checks. The conditions for this set to be applied are defined in the `ModelType` node with the same attribute.

12.3.12 <Setting> nodes

XPath: `/Environment/Profiles/Profile/Settings/Setting`

These nodes contain profile-specific settings:

- `Setting[@SettingID="SagForImportTessellationDescriptions"]`
This setting defines the sag parameter for tessellations. The value is used unless the check has its own sag parameter.
- `Setting[@SettingID="StepForImportTessellationDescriptions"]`
This setting defines the step parameter for tessellations. The value is used unless the check has its own step parameter.
- `Setting[@SettingID="FormatStringForFloatingPointNumbers"]`
This setting defines how floating-point numbers are displayed. For example, `%.3f` means, floating-point numbers are displayed with 3 decimal places.

12.3.13 <CheckLink> nodes

XPath: `/Environment/Profiles/Profile/Section/CheckLink`

These nodes define which checks are used in a profile.

Possible modifications:

- *Add a check instance*, page 136
- *Remove a check instance*, page 136

12.4 Create a profile

- 1 Inside the Profiles node, insert a new Profile node.

There must be only one Profile node.

```
<Profiles DefaultProfID="...">
  <Profile ProfID="...">
    ...
  </Profile>
  <Profile>
    </Profile>
</Profiles>
```

- 2 Set the ProfID attribute to a unique value, which is also the display name of the profile.

```
<Profile ProfID="...">
</Profile>
```

- 3 Inside the Profile node, insert one Section node.

Set the attribute ModelTypeID="DEFAULT".

```
<Profile ProfID="...">
  ...
  <Section ModelTypeID="DEFAULT">
    </Section>
</Profile>
```

- 4 Inside the Section node, insert one CheckLink node for every check to be included in the profile. Create a link to the check instance using the CheckInstID attribute.

➤ *Add a check instance, page 136*

12.5 Rename a mapping rule

- 1 Find the MappingRule node in the configuration.
- 2 Change the text in the Name node.

Example

```
<MappingRule
  RuleID="1001@MR_EM_EQUAL_INTERNAL_NAMES"
  RuleType="MR_EM_EQUAL_INTERNAL_NAMES">
  <Name LangID = "EN">Pairing by Internal Name</Name>
</MappingRule>
```

12.6 Duplicate a mapping rule

- 1 Find the MappingRule node to be duplicated.
- 2 Copy the entire MappingRule node.

```
<MappingRules ...>
  <EntityPairingRules>
    <MappingRule ...>
    ...
  </MappingRule>
</EntityPairingRules>
</MappingRules>
```

- 3 Insert the node inside the same direct parent node, for example inside EntityPairingRules.

```
<EntityPairingRules>
  <MappingRule ...>
  ...
</MappingRule>
  <MappingRule ...>
  ...
</MappingRule>
</EntityPairingRules>
```

- 4 In the inserted MappingRule node, change the attribute RuleID to a unique, unused value.

```
<EntityPairingRules>
  <MappingRule RuleID="1001@MR_EM_EQUAL_NAMES" ...>
  ...
</MappingRule>
  <MappingRule RuleID="1002@MR_EM_EQUAL_NAMES" ...>
  ...
</MappingRule>
</EntityPairingRules>
```

- 5 Change the text of the Name node, in order to distinguish the mapping rules by their names.

```
<EntityPairingRules>
  <MappingRule RuleID="1001@MR_EM_EQUAL_NAMES" ...>
  ...
</MappingRule>
  <MappingRule RuleID="1002@MR_EM_EQUAL_NAMES" ...>
    <Name LangID="EN">Renamed mapping rule</Name>
  </MappingRule>
</EntityPairingRules>
```

12.7 Add a check instance

- 1 Find the CheckInstId of the check instance to be linked to the profile.
- 2 In the Profile/Section node, add a new CheckLink node with the CheckInstId attribute of the check instance to be linked.

```
<Profile ...>
  <Section ...>
    <CheckLink CheckInstId="..." />
    <CheckLink CheckInstId="..." />
  ...
```

12.8 Remove a check instance

To remove a check, delete or comment out the CheckLink node in question.

```
<Profile ...>
  <Section ...>
    <CheckLink CheckInstId="..." />
    <!--<CheckLink CheckInstId="..." /> commented out -->
  ...
```

12.9 Rename a check instance

- 1 Find the CheckReference node in the configuration.
- 2 Change the text in the Name node.

Example

```
<CheckReference ... >
  ...
  <Name LangID = "EN">Compare Find Deleted/Non-Converted Element</Name>
</CheckReference>
```

12.10 Choose the mapping rules of a check

- 1 Find the CheckInstance node in the configuration.
- 2 To remove a mapping rule, remove or comment out the RuleLink node for the mapping rule in the CheckInstance/MappingRuleLinks node.

To add a mapping rule, add a RuleLink node with the desired RuleID attribute value. Note that mapping rules only work for certain checks and will be ignored by others.

Example

- Remove a mapping rule:

```
<CheckInstance ... >
...
<MappingRuleLinks>
  <!-- <RuleLink RuleID="1001@MR_EM_EQUAL_NAMES"/> commented out -->
...
<CheckReference>
```

- Add a mapping rule:

```
<CheckInstance ... >
...
<MappingRuleLinks>
  <RuleLink RuleID="1002@MR_EM_EQUAL_NAMES"/>
...
<CheckReference>
```

12.11 Duplicate a check instance

- 1 Find the CheckInstance node to be duplicated.
- 2 Copy the entire CheckInstance node.

```
<CheckReference ...>
  <CheckInstance ...>
  ...
</CheckInstance>
</CheckReference>
```

- 3 Insert the node inside the same CheckReference node.

```
<CheckReference ...>
  <CheckInstance ...>
  ...
  <CheckInstance ...>
  ...
</CheckInstance>
</CheckReference>
```

- 4 In the inserted CheckInstance node, change the attribute CheckInstId to a unique, unused value.

```
<CheckReference ...>
  <CheckInstance ... CheckInstId="c_inst_1">
    ...
  </CheckInstance>
  <CheckInstance ... CheckInstId="c_inst_2">
    ...
  </CheckInstance>
</CheckReference>
```

- 5 Change the text of the Name node, in order to distinguish the checks by their names.

```
<CheckReference ...>
  <CheckInstance ... CheckInstId="c_inst_1">
    ...
  </CheckInstance>
  <CheckInstance ... CheckInstId="c_inst_2">
    ...
    <Name LangID="EN">New check</Name>
  </CheckInstance>
</CheckReference>
```

12.12 Configure mapping rule parameters

12.12.1 General

Some mapping rules have parameters. The corresponding Parameter nodes use the following attributes:

- **IsActive:** To apply the default value, set to “False”. To use a custom value, set to “True”, and specify the value in the Value node.
- **ParameterID:** This is the unique identifier of the parameter. Do not change this value.
- **Type:** Data type of the parameter. Do not change this value. According to this attribute, specify the value as string (type STRING), integer number (type INT), or real number (type REAL).

Set the parameter value in the Value node.

12.12.2 Aggregate by name (MR_AB_SAME_NAME)

This mapping rule has the following parameters which can be edited only directly in the configuration file:

MatchSimilarNames Use this parameter to aggregate compare entities if the names of the reference entity and of compare entities to be aggregated match the given Regular Expression. In the Value element, specify one Regular Expression or a list of Regular Expressions separated by semicolon (;).

You can use placeholders **REFERENCENAME** and **COMPARENAME** for the names of the names of reference and compare entity, respectively.

If names must be identical, leave the parameter value empty.

```
<Parameter
  IsActive="True"
  ParameterID="MatchSimilarNames"
  Type="STRING">
  <Value></Value>
</Parameter>
```

FlatWithPathSymbol The mapping rules expects the names of geometrical features in the JT model to be composed of the V5 feature path with a separator between feature names. In the Value element, you can change the default separator “|”, if needed.

```
<Parameter
  IsActive="True"
  ParameterID="FlatWithPathSymbol"
  Type="STRING">
  <Value>|</Value>
</Parameter>
```

12.12.3 Pair by name (MR_EM_EQUAL_NAMES)

This mapping rule has the following parameters which can be edited only directly in the configuration file:

Pattern Use this parameter to pair entities if the names of reference and compare entity match the given Regular Expression. You can also specify a list of Regular Expressions which are separated by semicolon (;).

You can use placeholders REFERENCENAME and COMPARENAME for the names of the reference and compare entity, respectively.

When the parameter value is empty, the names must be identical.

```
<Parameter
  IsActive="True"
  ParameterID="Pattern"
  Type="STRING">
  <Value></Value>
</Parameter>
```

12.12.4 Selection of Drawing Sheets (MR_ES_DRAWING_SHEETS)

SelectActiveSheet To select only active sheets, set this parameter to “1”.

To select sheets according to the other parameters, set this parameter to “0”.

SelectDetailSheet To select detail sheets, set the parameter to “1”.

To exclude detail sheets, set this parameter to “0”.

This parameter is ignored if SelectActiveSheet is set to “1”.

SelectNonDetailSheet To select non-detail sheets, set the parameter to “1”.

To exclude non-detail sheets, set this parameter to “0”.

This parameter is ignored if SelectActiveSheet is set to “1”.

12.12.5 Select by name (MR_ES_HAS_NAME)

HasName Use this parameter to select only elements whose names match a certain Regular Expression. You also can specify several Regular Expressions separated by semicolon.

```
<Parameter IsActive="True" ParameterID="HasName" Type="STRING">  
  <Value>.*</Value>  
</Parameter>
```

12.12.6 Select by parent name (MR_ES_HAS_PARENT_NAME)

HasParentName Use this parameter to select only elements whose parent names match a given Regular Expression. Specify one or more Regular Expressions separated by semicolon.

```
<Parameter IsActive="True" ParameterID="HasParentName" Type="STRING">  
  <Value>.*</Value>  
</Parameter>
```

12.12.7 Select by parent type (MR_ES_HAS_PARENT_TYPE)

HasParentType Use this parameter to select only elements whose parents have the specified element types.

```
<Parameter IsActive="True" ParameterID="HasParentType" Type="STRING">  
  <Value>ET_UNKNOWN</Value>  
</Parameter>
```

12.12.8 Select by type (MR_ES_HAS_TYPE)

HasReferenceType Use this parameter to select only reference entities of the specified types.

HasCompareType Use this parameter to select only compare entities of the specified types.

12.12.9 Select by custom view (MR_ES_ISIN_CUSTOM_VIEW)

UseActiveCustomView To select only the active custom view and ignore all other custom views, set this parameter to “1”. To select custom views according to parameter AllowedCustomViews, set this parameter to “0”.

AllowedCustomViews Specify the names of custom views to be selected. Multiple values are separated by semicolon. To select all custom views, leave this parameter empty. This parameter is ignored if parameter UseActiveCustomView is set to “1”.

12.12.10 Selection by layer (MR_ES_ISON_LAYER)

IsOnLayer Specify the layer numbers. Multiple values are separated by semicolon.

12.13 Edit check parameters

We recommend to edit check parameters using the built-in configuration editor with graphical user interface. You can also edit check parameters directly in the configuration file.

Check parameters can have the following options, which are defined as attributes of the corresponding CheckInstance/Parameters/Parameter nodes:

- **IsActive:** To use the default value, set to False. To use a custom value, set to True, and specify the value in the Value node.
- **Max:** Maximum allowed value for integer or real values to be set via the graphical user interface.
- **Min:** Minimum allowed value for integer or real values to be set via the graphical user interface.
- **ParameterID:** This is the unique identifier of the parameter. Do not change this value.
- **Type:** Data type of the parameter. Do not change this value. According to this attribute, specify the value as string (type STRING), integer number (type INT), or real number (type REAL).

Parameters which are represented by check boxes in the configuration editor, can either take the value “1” (enabled) or “0” (disabled).

13 Known Issues



NOTE: Since xCompare V5/V5 1.9.1, configurations contain only one profile. If a previously created configuration contains more than one profile, it needs to be converted. To learn more, please contact the Transcat support hotline.

➤ *Contacting Transcat PLM, page 9*



NOTE: With xCompare V5/V5 1.7.1, the filename extension of configurations has changed from .qcmpconfigxml to .xcmpconfig.xml. Configurations with both filename extensions are supported.

If the configuration folder contains configurations with the same names except for the filename extension, xCompare uses only the configuration with the .xcmpconfig.xml extension. The configuration with the same name and the .qcmpconfigxml extension is ignored. In this case, xCompare shows a message when you open the xCompare main window.

To resolve this problem, rename or delete configuration files with identical names manually.



NOTE: The “Pairs” list in the analysis window does not always respond to keyboard input.



NOTE: When the “Center graph on selected pair” function in the analysis window is active and you select an entry in the “Pairs” list, the corresponding item in the CATIA specification tree is not always highlighted. This happens only in reopened reports.

Workaround: Click the background of the pairs list, then click the entry again.

